

APPLICATION FOR FINANCIAL ASSISTANCE
Revised 4/99

IMPORTANT: Please consult the "Instructions for Completing the Project Application" for assistance in completion of this form.

SUBDIVISION: Village of Cleves CODE# 061-16028
DISTRICT NUMBER: 2 COUNTY: Hamilton DATE 09 / 15 / 06
CONTACT: Jennifer L. Vatter PHONE # (513) 721-5500

(THE PROJECT CONTACT PERSON SHOULD BE THE INDIVIDUAL WHO WILL BE AVAILABLE ON A DAY-TO-DAY BASIS DURING THE APPLICATION REVIEW AND SELECTION PROCESS AND WHO CAN BEST ANSWER OR COORDINATE THE RESPONSE TO QUESTIONS)

FAX (513) 721-0607 E-MAIL jvatter@jmaconsult.com

PROJECT NAME: Westgate & Scott Street Reconstruction

SUBDIVISION TYPE

(Check only 1)

- ☐ 1. County
☐ 2. City
☐ 3. Township
☒ 4. Village
☐ 5. Water/Sanitary District
(Section 6119 O.R.C.)

FUNDING TYPE REQUESTED

(Check All Requested & Enter Amount)

- ☒ 1. Grant \$ 548,000.00
☐ 2. Loan \$ _____
☐ 3. Loan Assistance \$ _____

PROJECT TYPE

(Check Largest Component)

- ☒ 1. Road
☐ 2. Bridge/Culvert
☐ 3. Water Supply
☐ 4. Wastewater
☐ 5. Solid Waste
☐ 6. Stormwater

TOTAL PROJECT COST: \$ 685,000.00

FUNDING REQUESTED: \$ 548,000.00

DISTRICT RECOMMENDATION

To be completed by the District Committee ONLY

GRANT: \$ 548,000.00
SCIP LOAN: \$ _____
RLP LOAN: \$ _____

LOAN ASSISTANCE: \$ _____
RATE: _____ % TERM: _____ yrs.
RATE: _____ % TERM: _____ yrs.

(Check only 1)

- ☒ State Capital Improvement Program
☐ Local Transportation Improvements Program

☐ Small Government Program

FOR OPWC USE ONLY

PROJECT NUMBER: C _____ / C _____
Local Participation _____ %
OPWC Participation _____ %
Project Release Date: ____ / ____ / ____
OPWC Approval: _____

APPROVED FUNDING: \$ _____
Loan Interest Rate: _____ %
Loan Term: _____ years
Maturity Date: _____
Date Approved: ____ / ____ / ____
SCIP Loan _____ RLP Loan _____

2006 SEP 15 PM 1:52

OFFICE OF NEW BURLINGTON
COUNTY ENGINEER

1.0 PROJECT FINANCIAL INFORMATION

1.1 PROJECT ESTIMATED COSTS: (Round to Nearest Dollar)	TOTAL DOLLARS	FORCE ACCOUNT DOLLARS
a.) Basic Engineering Services:	\$ _____ .00	
Preliminary Design	\$ _____ .00	
Final Design	\$ _____ .00	
Bidding	\$ _____ .00	
Construction Phase	\$ _____ .00	
Additional Engineering Services	\$ _____ .00	
*Identify services and costs below.		
b.) Acquisition Expenses:		
Land and/or Right-of-Way	\$ _____ .00	
c.) Construction Costs:	\$ 685,000 _____ .00	
d.) Equipment Purchased Directly:	\$ _____ .00	
e.) Permits, Advertising, Legal:	\$ _____ .00	
(Or Interest Costs for Loan Assistance Applications Only)		
f.) Construction Contingencies:	\$ _____ .00	
g.) TOTAL ESTIMATED COSTS:	\$ 685,000 _____ .00	

*List Additional Engineering Services here:
Service:

Cost:

1.2 PROJECT FINANCIAL RESOURCES:

(Round to Nearest Dollar and Percent)

	DOLLARS	%
a.) Local In-Kind Contributions	\$ <u> .00</u>	
b.) Local Revenues	\$ <u>137,000 .00</u>	<u>20</u>
c.) Other Public Revenues	\$ <u> .00</u>	
ODOT	\$ <u> .00</u>	
Rural Development	\$ <u> .00</u>	
OEPA	\$ <u> .00</u>	
OWDA	\$ <u> .00</u>	
CDBG	\$ <u> .00</u>	
OTHER _____	\$ <u> .00</u>	
SUBTOTAL LOCAL RESOURCES:	\$ <u>137,000 .00</u>	<u>20</u>
d.) OPWC Funds		
1. Grant	\$ <u>548,000 .00</u>	<u>80</u>
2. Loan	\$ <u> .00</u>	
3. Loan Assistance	\$ <u> .00</u>	
SUBTOTAL OPWC RESOURCES:	\$ <u>548,000 .00</u>	<u>80</u>
TOTAL FINANCIAL RESOURCES:	\$ <u>685,000 .00</u>	<u>100%</u>

1.3 AVAILABILITY OF LOCAL FUNDS:

Attach a statement signed by the Chief Financial Officer listed in section 5.2 certifying all local share funds required for the project will be available on or before the earliest date listed in the Project Schedule section.

ODOT PID# _____ Sale Date: _____
STATUS: (Check one)
 Traditional
 Local Planning Agency (LPA)
 State Infrastructure Bank

2.0 PROJECT INFORMATION

If project is multi-jurisdictional, information must be consolidated in this section.

2.1 PROJECT NAME: Westgate & Scott Street Reconstruction

2.2 BRIEF PROJECT DESCRIPTION - (Sections A through C):

A: SPECIFIC LOCATION:

The project is located in the Village of Cleves. Project limits are Westgate, Morgan to 400' past Scott, Sta. 0+00 to 13+00 (Thelen report). Please see attached location map.

Scott St. from Westgate to 300' west (match at newer pavement)

PROJECT ZIP CODE: 45002

B: PROJECT COMPONENTS:

- 1.) Remove existing 30 year old pavement (Thelen report pg. 10)
- 2.) Remove & replace existing separated and collapsed drainage structures
- 3.) Reconstruct with new asphaltic concrete pavement (install gravel base with drains (Thelen report pg. 12)
- 4.) Seeding & mulching as necessary
- 5.) Remove, stabilize & reconstruct slip area with pier wall (Thelen report pg. 10)
- 6.) Replace deteriorated curb
- 7.) Remove inferior pavement section (Thelen report pg. 5)
- 8.) Add geogrid (Thelen report pg. 14)

C: PHYSICAL DIMENSIONS / CHARACTERISTICS:

The existing facility is deteriorated and has numerous base failures (see geotechnical report pg. 2, 4, 5). Existing storm drains are deteriorated and replacement is the only feasible solution. Roadway is slipping (see geotechnical report pg. 4).

Westgate – 28' wide x 1,300' long

Scott – 28' wide x 200' long

15'-6"

D: DESIGN SERVICE CAPACITY:

Detail current service capacity vs. proposed service level.

Road or Bridge: Current ADT 960 Year: 2002 Projected ADT: same Year:

Water/Wastewater: Based on monthly usage of 7,756 gallons per household, attach current rate ordinance. Current Residential Rate: \$ _____ Proposed Rate: \$ _____

Stormwater: Number of households served:

2.3 USEFUL LIFE / COST ESTIMATE: Project Useful Life: 30 Years.

Attach Registered Professional Engineer's statement, with original seal and signature confirming the project's useful life indicated above and estimated cost.

3.0 REPAIR/REPLACEMENT or NEW/EXPANSION:

TOTAL PORTION OF PROJECT REPAIR/REPLACEMENT	\$ <u>685,000.00</u>
TOTAL PORTION OF PROJECT NEW/EXPANSION	\$ <u> .00</u>

4.0 PROJECT SCHEDULE: *

	BEGIN DATE	END DATE
4.1 Engineering/Design:	<u>06 / 01 / 06</u>	<u>06 / 01 / 07</u>
4.2 Bid Advertisement and Award:	<u>07 / 01 / 07</u>	<u>07 / 21 / 07</u>
4.3 Construction:	<u>08 / 01 / 07</u>	<u>12 / 01 / 08</u>
4.4 Right-of-Way/Land Acquisition:	<u> / / </u>	<u> / / </u>

* Failure to meet project schedule may result in termination of agreement for approved projects. Modification of dates must be requested in writing by the CEO of record and approved by the commission once the Project Agreement has been executed. The project schedule should be planned around receiving a Project Agreement on or about July 1st.

5.0 APPLICANT INFORMATION:

5.1 CHIEF EXECUTIVE

OFFICER	Danny Stacy
TITLE	Mayor
STREET	101 N. Miami Avenue
CITY/ZIP	Cleves, Ohio 45002
PHONE	513-941-5127
FAX	513-941-5198
E-MAIL	

5.2 CHIEF FINANCIAL

OFFICER	Linda Bolton
TITLE	Clerk/Treasurer
STREET	101 N. Miami Avenue
CITY/ZIP	Cleves, Ohio 45002
PHONE	513-941-5127
FAX	513-941-5198
E-MAIL	

5.3 PROJECT MANAGER

TITLE	William R. McCormick (JMA Consultants, Inc.)
STREET	Project Manager
CITY/ZIP	4357 Harrison Avenue
PHONE	Cincinnati, Ohio 45211
FAX	513-721-5500
E-MAIL	513-721-0607

Changes in Project Officials must be submitted in writing from the CEO

6.0 ATTACHMENTS/COMPLETENESS REVIEW:

Confirm in the blocks [] below that each item listed is attached.

- [X] A certified copy of the legislation by the governing body of the applicant authorizing a designated official to sign and submit this application and execute contracts. This individual should sign under 7.0, Applicant Certification, below.
- [X] A certification signed by the applicant's chief financial officer stating all local share funds required for the project will be available on or before the dates listed in the Project Schedule section. If the application involves a request for loan (RLP or SCIP), a certification signed by the CFO which identifies a specific revenue source for repaying the loan also must be attached. Both certifications can be accomplished in the same letter.
- [] A cooperation agreement (if the project involves more than one
- [X] A registered professional engineer's detailed cost estimate and useful life statement, as required in 164-1-13, 164-1-14, and 164-1-16 of the Ohio Administrative Code. Estimates shall contain an engineer's original seal or stamp and signature, subdivision or district) which identifies the fiscal and administrative responsibilities of each participant.
- [X] Projects which include new and expansion components and potentially affect productive farmland should include a statement evaluating the potential impact. If there is a potential impact, the Governor's Executive Order 98-VII and the OPWC Farmland Preservation Review Advisory apply.
- [X] Capital Improvements Report: (Required by O.R.C. Chapter 164.06 on standard form)
- [X] Supporting Documentation: Materials such as additional project description, photographs, economic impact (temporary and/or full time jobs likely to be created as a result of the project), accident reports, impact on school zones, and other information to assist your district committee in ranking your project. Be sure to include supplements which may be required by your *local* District Public Works Integrating Committee.

7.0 APPLICANT CERTIFICATION:

The undersigned certifies that: (1) he/she is legally authorized to request and accept financial assistance from the Ohio Public Works Commission; (2) to the best of his/her knowledge and belief, all representations that are part of this application are true and correct; (3) all official documents and commitments of the applicant that are part of this application have been duly authorized by the governing body of the applicant; and, (4) should the requested financial assistance be provided, that in the execution of this project, the applicant will comply with all assurances required by Ohio Law, including those involving Buy Ohio and prevailing wages.

Applicant certifies that physical construction on the project as defined in the application has NOT begun, and will not begin until a Project Agreement on this project has been executed with the Ohio Public Works Commission. Action to the contrary will result in termination of the agreement and withdrawal of Ohio Public Works Commission funding of the project.

DANNY STACY MAYOR
Certifying Representative (Type or Print Name and Title)


Danny Stacy - Mayor. 9/13/06
Signature/Date Signed

Engineer's Estimate

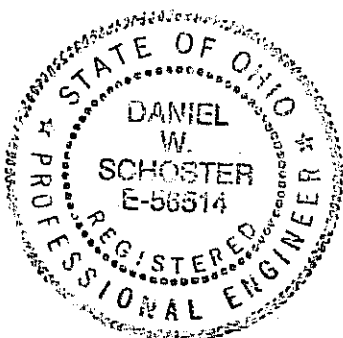
WESTGATE & SCOTT ST. RECONSTRUCTION VILLAGE OF CLEVES

DESCRIPTION	QUANTITY	UNIT	PRICE	COST
Clearing & Grubbing	1	LS	\$ 5,000.00	\$ 5,000.00
Pavement Removed	6000	SY	\$ 15.00	\$ 90,000.00
Asphaltic Base	1000	CY	\$ 85.00	\$ 85,000.00
Granular Base	1500	CY	\$ 40.00	\$ 60,000.00
Asphalt Concrete	400	CY	\$ 90.00	\$ 36,000.00
Drive Aprons	300	SY	\$ 40.00	\$ 12,000.00
18" Storm	1000	LF	\$ 75.00	\$ 75,000.00
Catch Basin, CB-3	12	EA	\$ 2,000.00	\$ 24,000.00
Curb, Type 6	4000	LF	\$ 12.00	\$ 48,000.00
Construction Layout	1	LS	\$ 15,000.00	\$ 15,000.00
Seeding & Mulching	500	SY	\$ 5.00	\$ 2,500.00
Waterline Adjustment	1	LS	\$ 58,000.00	\$ 58,000.00
Underdrain	1	LS	\$ 22,500.00	\$ 22,500.00
Pier Wall	1	LS	\$ 90,000.00	\$ 90,000.00
Geogrid	6000	SY	\$ 2.00	\$ 12,000.00
Undercut	1000	CY	\$ 50.00	\$ 50,000.00
TOTAL ESTIMATED COST				\$ 685,000.00

I hereby certify this to be an accurate estimate of
the proposed project. The useful life of this project
is 20 years.


Daniel W. Schoster, P.E.
JMA Consultants, Inc.


Date





Village of Cleves, Ohio

MAYOR
DANNY STACY
(513) 941-5127

INCORPORATED 1875

101 NORTH MIAMI AVENUE
CLEVES, OHIO 45002

WWW.CLEVES.ORG

CLERK / TREASURER
LINDA C. BOLTON
(513) 941-5127
(513) 941-5198, fax

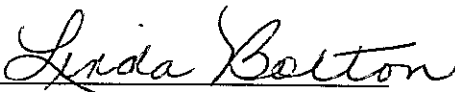
CHIEF OF POLICE
MARK DEMEROPOLIS
(513) 941-1212

FIRE CHIEF
DOUG MOORE
(513) 941-1111

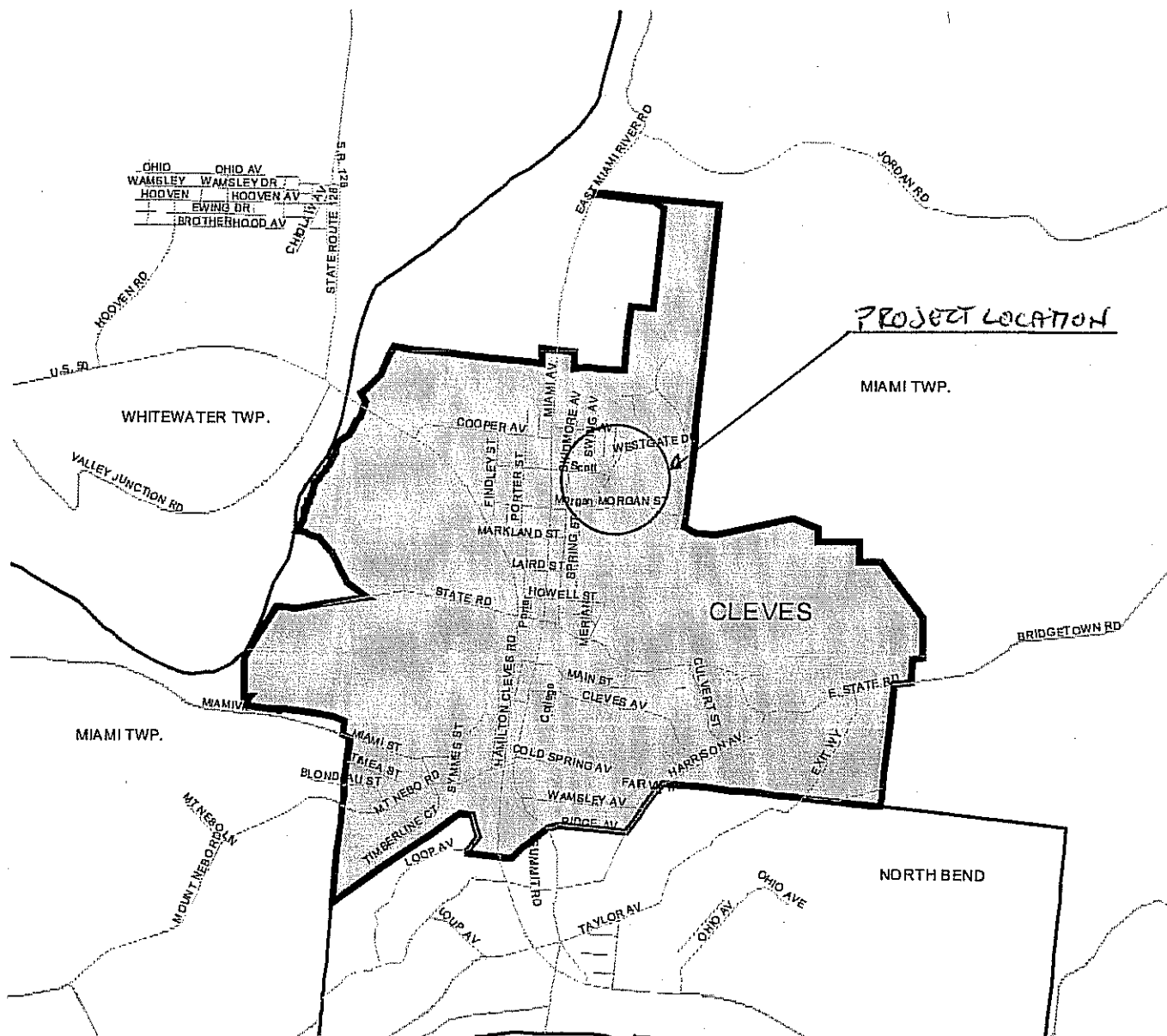
STREET COMMISSIONER
ERIC WINHUSEN
(513) 941-5127

STATUS OF FUNDS CERTIFICATION

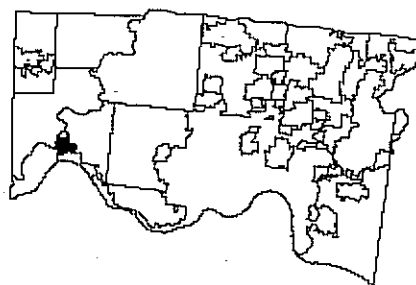
The Village of Cleves will utilize \$137,000 from its local budget as its participation for the Westgate & Scott Street Improvements project.


Linda Bolton, Clerk/Treasurer
Village of Cleves

Date Signed: 9/6/06



Cleves Hamilton County, Ohio



RESOLUTION NO. 5, 2006.

**A RESOLUTION AUTHORIZING THE MAYOR TO MAKE APPLICATION FOR
FISCAL YEAR 2007 STATE CAPITAL IMPROVEMENT PROGRAM FUNDS AND IF
FUNDS ARE AWARDED TO EXECUTE GRANT AGREEMENTS ON BEHALF OF
THE VILLAGE**

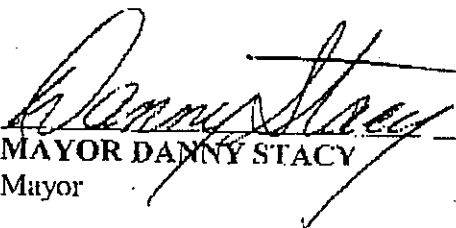
WHEREAS, the Council of the Village of Cleves has determined that it would be in the best interest and to promote the general welfare of the community to apply for the 2007 State Capital Improvement Program Funds and if funds are awarded to execute a grant agreement or agreements on behalf of the Village.

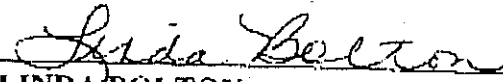
NOW, THEREFORE, BE IT ORDAINED by the Council of the Village of Cleves,
Hamilton County, Ohio:

Section 1. The Mayor is hereby authorized to make application(s) for the State Capital Improvement Program (SCIP) funds for fiscal year 2007.

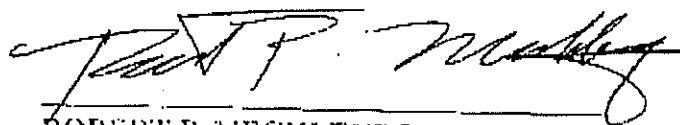
Section 2. That if funds are awarded, the Mayor is hereby authorized to execute a grant agreement or agreements on behalf of the Village.

Passed: July 12, 2006.


MAYOR DANNY STACY
Mayor

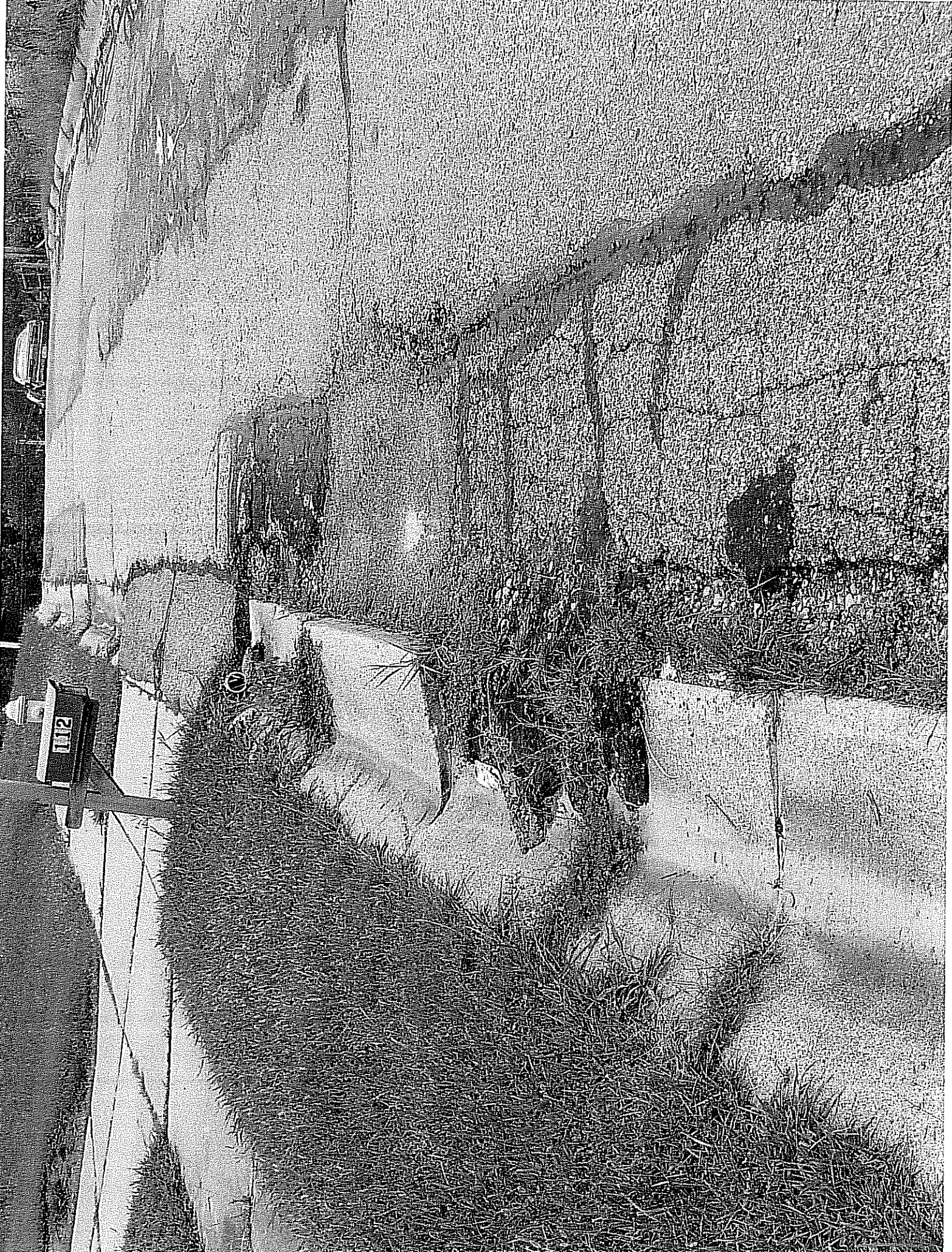

LINDA BOLTON
Clerk

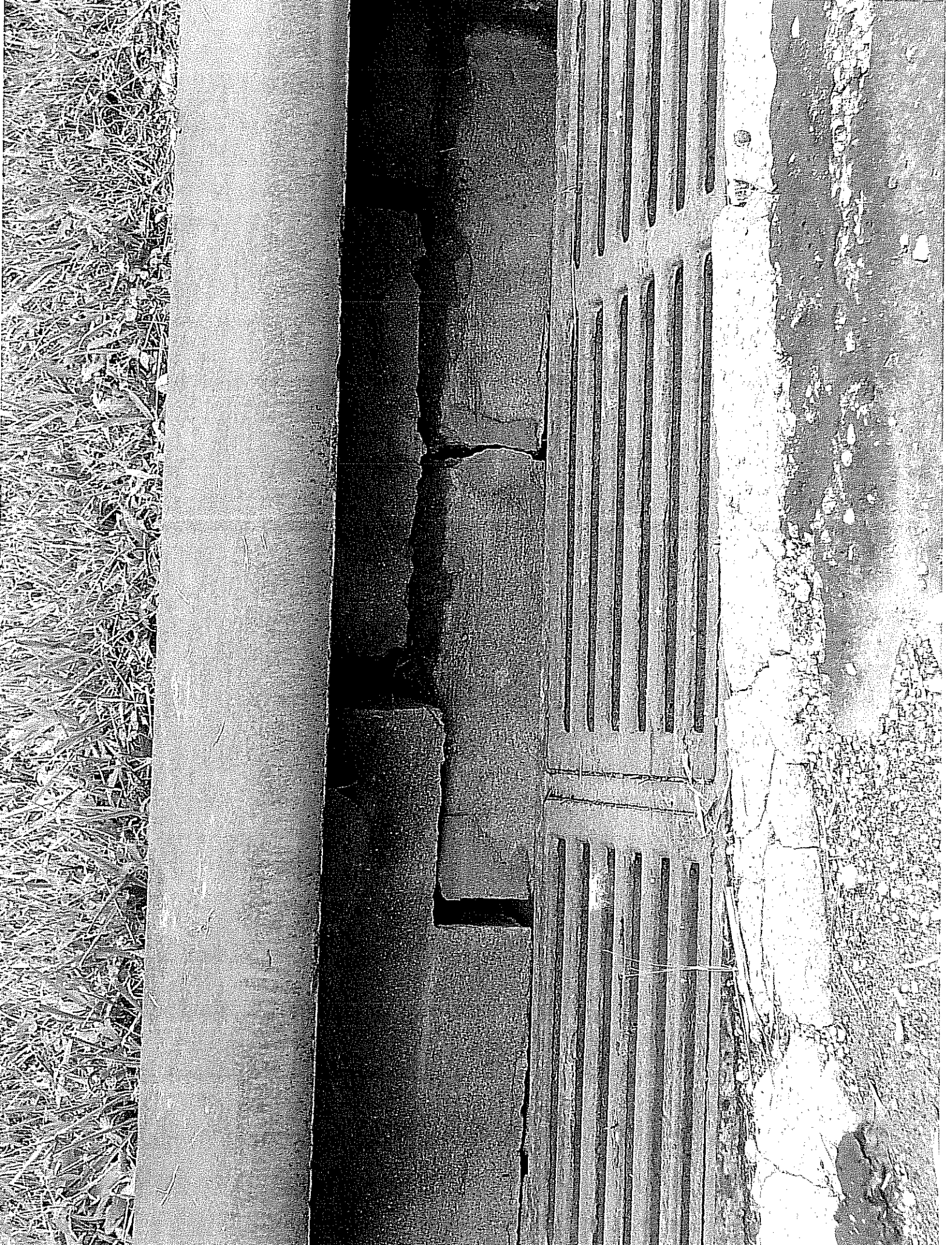
Approved as to Form:


ROBERT P. MECKLENBORG
Solicitor

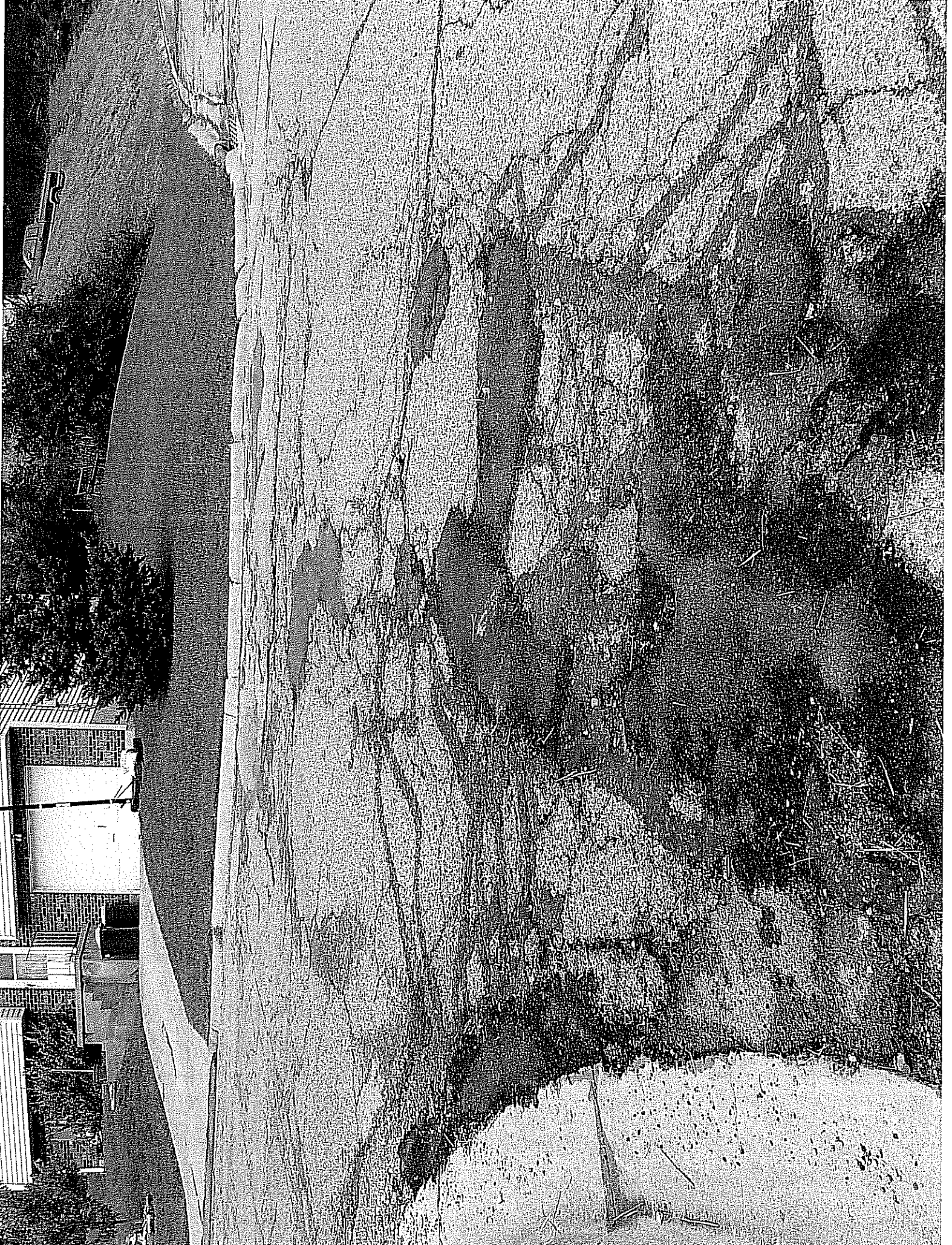


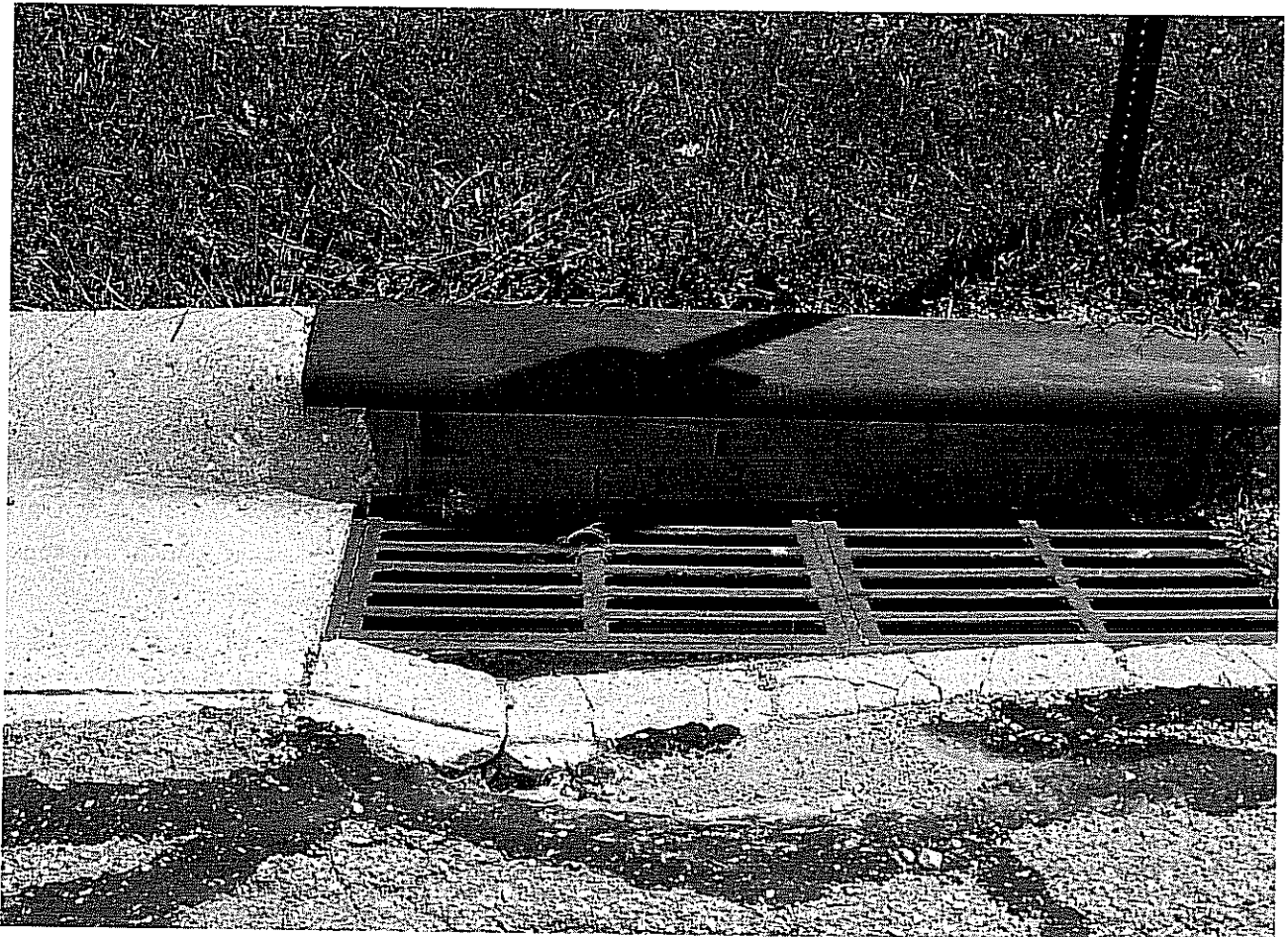
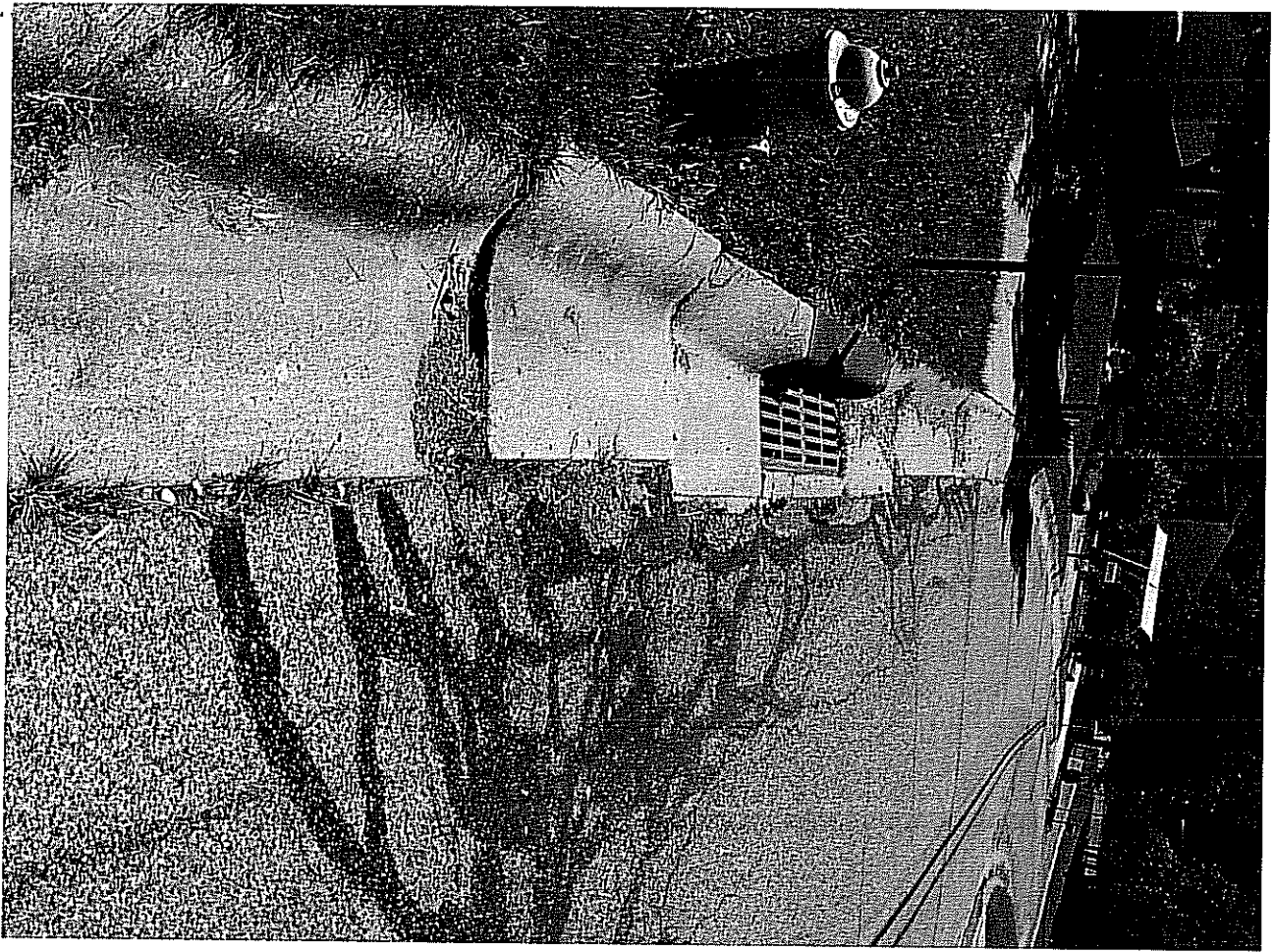














ADDITIONAL SUPPORT INFORMATION

For Program Year 2007 (July 1, 2007 through June 30, 2008), jurisdictions shall provide the following support information to help determine which projects will be funded. Information on this form must be accurate, and where called for, based on sound engineering principles. Documentation to substantiate the individual items, as noted, is required. The applicant should also use the rating system and its' addendum as a guide. The examples listed in this addendum are not a complete list, but only a small sampling of situations that may be relevant to a given project.

IF YOU ARE APPLYING FOR A GRANT, WILL YOU BE WILLING TO ACCEPT A LOAN IF ASKED BY THE DISTRICT? _____ YES _____ X NO (ANSWER REQUIRED)

Note: Answering "Yes" will not increase your score and answering "NO" will not decrease your score.

1) What is the physical condition of the existing infrastructure that is to be replaced or repaired?

Give a statement of the nature of the deficient conditions of the present facility exclusive of capacity, serviceability, health and/or safety issues. If known, give the approximate age of the infrastructure to be replaced, repaired, or expanded. Use documentation (if possible) to support your statement. Documentation may include (but is not limited to): ODOT BR86 reports, pavement management condition reports, televised underground system reports, age inventory reports, maintenance records, etc., and will only be considered if included in the original application.

The existing facility has numerous base failures (Thelen report pg. 2, 4, 5, 10). The curb is deteriorating and the roadway is slipping (Thelen report pg. 10). There are potholes, alligator cracking and the pavement is very rough (Thelen report). Curbs are heaving and deteriorating & must be replaced. This pavement is 30 years old and has reached the end of its useful life (Thelen report pg. 10).

2) How important is the project to the safety of the Public and the citizens of the District and/or service area?

Give a statement of the projects effect on the safety of the service area. The design of the project is intended to reduce existing accident rate, promote safer conditions, and reduce the danger of risk, liability or injury. (Typical examples may include the effects of the completed project on accident rates, emergency response time, fire protection, and highway capacity.) Please be specific and provide documentation if necessary to substantiate the data. The applicant must demonstrate the type of problems that exist, the frequency and severity of the problems and the method of correction.

By reconstructing the street, we will eliminate potential sliding of this pavement. This will eliminate the possibility of personal injuries due to damage caused by the pavement sliding. A smooth driving surface will decrease the potential for head-on accidents caused by vehicles swerving to miss the potholes. This is the only access point for over 200 residents. When the pavement fails, emergency vehicles and residents will not be able to get out or into the subdivision. Improvements to the drainage system and roadway will reduce freezing of standing water in the street (Thelen report pg. 5). A retaining wall (pier wall) on the uphill side of the street will eliminate the movement of the hillside which is causing the slide. Underdrains will be installed on the uphill side of the street to keep the pavement from being undermined.

3) How important is the project to the health of the Public and the citizens of the District and/or service area?

Give a statement of the projects effect on the health of the service area. The design of the project will improve the overall condition of the facility so as to reduce or eliminate potential for disease, or correct concerns regarding the environmental health of the area. (Typical examples may include the effects of the completed project by improving or adding storm drainage or sanitary facilities, replacing lead jointed water lines, etc.). Please be specific and provide documentation if necessary to substantiate the data. The applicant must demonstrate the type of problems that exist, the frequency and severity of the problems and the method of correction.

Ponding after rain due to inadequate drainage promotes the potential freezing of ponding water which creates a dangerous driving environment (see Thelen report pg. 5). The reconstruction of this street will eliminate potential health hazards due to the sliding of the pavement. Emergency vehicles will not be able to traverse this street when the pavement eventually fails. If this pavement was to fail, there would be no means of emergency vehicle access to nearly 200 homes located above the slide area.

4) Does the project help meet the infrastructure repair and replacement needs of the applying jurisdiction?

The jurisdiction must submit a listing in priority order of the projects for which it is applying. Points will be awarded on the basis of most to least importance.

Priority 1 Westgate & Scott Street Reconstruction

Priority 2 State Road (S.R. 264) Reconstruction Phase II

Priority 3 _____

Priority 4 _____

Priority 5 _____

5) To what extent will the user fee funded agency be participating in the funding of the project?

(example: rates for water or sewer, frontage assessments, etc.).

No participation - Zero (0) %

6) Economic Growth – How will the completed project enhance economic growth

Give a statement of the projects effect on the economic growth of the service area (be specific).

The project will not have a significant impact on economic growth.

7) Matching Funds - LOCAL

The information regarding local matching funds is to be filed by the applicant in Section 1.2 (b) of the Ohio Public Works Association's "Application For Financial Assistance" form.

8) Matching Funds - OTHER

The information regarding local matching funds is to be filed by the applicant in Section 1.2 (c) of the Ohio Public Works Association's "Application For Financial Assistance" form. If MRF funds are being used for matching funds, the MRF application must have been filed by September 1, 2006 for this project with the Hamilton County Engineer's Office. List below all "other" funding the source(s).

Local funding is utilized for matching funds for this project.

9) Will the project alleviate serious traffic problems or hazards or respond to the future level of service needs of the district?

Describe how the proposed project will alleviate serious traffic problems or hazards (be specific).

No effect on level of service

For roadway betterment projects, provide the existing and proposed Level of Service (LOS) of the facility using the methodology outlined within AASHTO'S "Geometric Design of Highways and Streets" and the 1985 Highway Capacity Manual.

Existing LOS _____

Proposed LOS _____

If the proposed design year LOS is not "C" or better, explain why LOS "C" cannot be achieved.

10) If SCIP/LTIP funds were granted, when would the construction contract be awarded?

If SCIP/LTIP funds are awarded, how soon after receiving the Project Agreement from OPWC (tentatively set for July 1 of the year following the deadline for applications) would the project be under contract? The Support Staff will review status reports of previous projects to help judge the accuracy of a jurisdiction's anticipated project schedule.

Number of months 2

a.) Are preliminary plans or engineering completed? Yes x No N/A

b.) Are detailed construction plans completed? Yes _____ No x N/A _____

c.) Are all utility coordination's completed? Yes _____ No x N/A _____

d.) Are all right-of-way and easements acquired (if applicable)?
Yes _____ No _____ N/A x

If no, how many parcels needed for project? _____ Of these, how many are: Takes _____
Temporary _____
Permanent _____

For any parcels not yet acquired, explain the status of the ROW acquisition process for this project.

e.) Give an estimate of time needed to complete any item above not yet completed. 6 Months.

11) Does the infrastructure have regional impact?

Give a brief statement concerning the regional significance of the infrastructure to be replaced, repaired, or expanded.

This will affect the residents of the Village of Cleves

12) What is the overall economic health of the jurisdiction?

The District 2 Integrating Committee predetermines the jurisdiction's economic health. The economic health of a jurisdiction may periodically be adjusted when census and other budgetary data are updated.

13) Has any formal action by a federal, state, or local government agency resulted in a partial or complete ban of the usage or expansion of the usage for the involved infrastructure?

Describe what formal action has been taken which resulted in a ban of the use of or expansion of use for the involved infrastructure? Typical examples include weight limits, truck restrictions, and moratoriums or limitations on issuance of building permits, etc. The ban must have been caused by a structural or operational problem to be considered valid. Submission of a copy of the approved legislation would be helpful.

No ban

Will the ban be removed after the project is completed? Yes ☐ No ☐ N/A ☒

14) What is the total number of existing daily users that will benefit as a result of the proposed project?

For roads and bridges, multiply current Average Daily Traffic (ADT) by 1.20. For inclusion of public transit, submit documentation substantiating the count. Where the facility currently has any restrictions or is partially closed, use documented traffic counts prior to the restriction. For storm sewers, sanitary sewers, water lines, and other related facilities, multiply the number of households in the service area by 4. User information must be documented and certified by a professional engineer or the jurisdictions' C.E.O.

Traffic: ADT 800 X 1.20 = 960 Users

Water/Sewer: Homes _____ X 4.00 = _____ Users

15) Has the jurisdiction enacted the optional \$5 license plate fee, an infrastructure levy, a user fee, or dedicated tax for the pertinent infrastructure?

The applying jurisdiction shall list what type of fees, levies or taxes they have dedicated toward the type of infrastructure being applied for. (Check all that apply)

Optional \$5.00 License Tax ☒

Infrastructure Levy _____ Specify type _____

Facility Users Fee _____ Specify type _____

Dedicated Tax _____ Specify type _____

Other Fee, Levy or Tax ☒ Specify type Village sold note dedicated to street repair

SCIP/LTIP PROGRAM
ROUND 21 - PROGRAM YEAR 2007
PROJECT SELECTION CRITERIA
JULY 1, 2007 TO JUNE 30, 2008

①

NAME OF APPLICANT: VILLAGE OF CLARK

NAME OF PROJECT: WESTGATE & SCOTT STREET RECONSTRUCTION

RATING TEAM: 4

General Statement for Rating Criteria

Points awarded for all items will be based on engineering experience, field verification, application information and other information supplied by the applying agency, which is deemed to be relevant by the Support Staff. The examples listed in this addendum are not a complete list, but only a small sampling of situations that may be relevant to a given project.

CIRCLE THE APPROPRIATE RATING

1) What is the physical condition of the existing infrastructure that is to be replaced or repaired?

- ☒ 25 - Failed
23 - Critical
20 - Very Poor
17 - Poor
15 - Moderately Poor
10 - Moderately Fair
5 - Fair Condition
0 - Good or Better

Appeal Score

Criterion 1 - Condition

Condition of the particular infrastructure to be repaired, reconstructed or replaced shall be a measure of the degree of reduction in condition from its original state. Capacity, serviceability, safety and health shall not be considered in this criterion. Any documentation the Applicant wishes to be considered must be included in the application package.

Definitions:

Failed Condition - requires complete reconstruction where no part of the existing facility is salvageable. (E.g. Roads: complete reconstruction of roadway, curbs and base; Bridges: complete removal and replacement of bridge; Underground: removal and replacement of an underground drainage or water system.)

Critical Condition - requires partial reconstruction to maintain integrity. (E.g. Roads: reconstruction of roadway/curbs can be saved; Bridges: removal and replacement of bridge with abutment modification; Underground: removal and replacement of part of an underground drainage or water system.)

Very Poor Condition - requires extensive rehabilitation to maintain integrity. (E.g. Roads: extensive full depth, partial depth and curb repair of a roadway with a structural overlay; Bridges: superstructure replacement; Underground: repair of joints and/or replacement of pipe sections.)

Poor Condition - requires standard rehabilitation to maintain integrity. (E.g. Roads: moderate full depth, partial depth and curb repair to a roadway with no structural overlay needed or structural overlay with minor repairs to a roadway needed; Bridges: extensive patching of substructure and replacement of deck; Underground: insituform or other in ground repairs.)

Moderately Poor Condition - requires minor rehabilitation to maintain integrity. (E.g. Roads: minor full depth, partial depth or curb repairs to a roadway with either a thin overlay or no overlay needed; Bridges: major structural patching and/or major deck repair.)

Moderately Fair Condition - requires extensive maintenance to maintain integrity. (E.g. Roads: thin or no overlay with extensive crack sealing, minor partial depth and/or slurry or rejuvenation; Bridges: minor structural patching, deck repair, erosion control.)

Fair Condition - requires routine maintenance to maintain integrity. (E.g. Roads: slurry seal, rejuvenation or routine crack sealing to the roadway; Bridges: minor structural patching.)

Good or Better Condition - little to no maintenance required to maintain integrity.

Note: If the infrastructure is in "good" or better condition, it will **NOT** be considered for SCIP/LTIP funding unless it is an expansion project that will improve serviceability.

2) How important is the project to the safety of the Public and the citizens of the District and/or service area?

- 25 - Highly significant importance
- 20 - Considerably significant importance
- 15 - Moderate importance
- 10 - Minimal importance
- 5 - Poorly documented importance
- 0 - No measurable impact

Appeal Score

Criterion 2 – Safety

The applying agency shall include in its application the type, frequency, and severity of the safety problem that currently exists and how the intended project would improve the situation. For example, have there been vehicular accidents attributable to the problems cited? Have they involved injuries or fatalities? In the case of water systems, are existing hydrants non-functional? In the case of water lines, is the present capacity inadequate to provide volumes or pressure for adequate fire protection? **In all cases, specific documentation is required.** Mentioned problems, which are poorly documented, shall not receive more than 5 points.

Note: Each project is looked at on an individual basis to determine if any aspects of this category apply. Examples given above are NOT intended to be exclusive.

3) How important is the project to the health of the Public and the citizens of the District and/or service area?

- 25 - Highly significant importance
- 20 - Considerably significant importance
- 15 - Moderate importance
- 10 - Minimal importance
- 5 - Poorly documented importance
- 0 - No measurable impact

Appeal Score

Criterion 3 – Health

The applying agency shall include in its application the type, frequency, and severity of the health problem that would be eliminated or reduced by the intended project. For example, can the problem be eliminated only by the project, or would routine maintenance be satisfactory? If basement flooding has occurred, was it storm water or sanitary flow? What complaints if any are recorded? In the case of underground improvements, how will they improve health if they are storm sewers? How would improved sanitary sewers improve health or reduce health risk? **In all cases, quantified documentation is required.** Mentioned problems, which are poorly documented, shall not receive more than 5 points.

Note: Each project is looked at on an individual basis to determine if any aspects of this category apply. Examples given above are NOT intended to be exclusive.

4) Does the project help meet the infrastructure repair and replacement needs of the applying agency?

Note: Applying agency's priority listing (part of the Additional Support Information) must be filed with application(s).

- 25 - First priority project
- 20 - Second priority project
- 15 - Third priority project
- 10 - Fourth priority project
- 5 - Fifth priority project or lower

Appeal Score

Criterion 4 – Jurisdiction's Priority Listing

The applying agency **must** submit a listing in priority order of the projects for which it is applying. Points will be awarded on the basis of most to least importance. The form is included in the Additional Support Information.

5) To what extent will a user fee funded agency be participating in the funding of the project?

☒ 10 - Less than 10%

9 - 10% to 19.99%

8 - 20% to 29.99%

7 - 30% to 39.99%

6 - 40% to 49.99%

5 - 50% to 59.99%

4 - 60% to 69.99%

3 - 70% to 79.99%

2 - 80% to 89.99%

1 - 90% to 95%

0 - Above 95%

Appeal Score

Criterion 5 – User Fee-funded Agency Participation

To what extent will a user fee funded agency be participating in the funding of the project? (Example: rates for water or sewer, frontage assessments, etc.). The applying agency must submit documentation.

6) **Economic Growth – How the completed project will enhance economic growth (See definitions).**

10 - The project will directly secure new employment

5 - The project will permit more development

☒ 0 - The project will not impact development

Appeal Score

Criterion 6 – Economic Growth

Will the completed project enhance economic growth and/or development in the service area?

Definitions:

Secure new employment: The project as designed will secure development/employers, which will immediately add new permanent employees to the jurisdiction. The applying agency must submit details.

Permit more development: The project as designed will permit additional business development/employment. The applying agency must supply details.

The project will not impact development: The project will have no impact on business development.

Note: Each project is looked at on an individual basis to determine if any aspects of this category apply.

7) **Matching Funds - LOCAL**

10 - This project is a loan or credit enhancement

10 - 50% or higher

8 - 40% to 49.99%

6 - 30% to 39.99%

☒ 4 - 20% to 29.99%

2 - 10% to 19.99%

0 - Less than 10%

List total percentage of "Local" funds 20 %

Criterion 7 – Matching Funds – Local

The percentage of matching funds which come directly from the budget of the applying agency. Ten points shall be awarded if a loan request is at least 50% of the total project cost. (If the applying agency is not a user fee funded agency, any funds to be provided by a user fee generating agency will be considered "Matching Funds – Other")

8) Matching Funds – OTHER

List total percentage of “Other” funds 0 %

- 10 – 50% or higher
- 8 – 40% to 49.99%
- 6 – 30% to 39.99%
- 4 – 20% to 29.99%
- 2 – 10% to 19.99%
- 1 – 1% to 9.99%
- 0 – Less than 1%

List below each funding source and percentage

_____	_____ %
_____	_____ %
_____	_____ %
_____	_____ %
_____	_____ %

Criterion 8 – Matching Funds - Other

The percentage of matching funds that come from funding sources other than those mentioned in Criterion 7. A letter from the outside funding agency stating their financial participation in the project and the amount of funding is required to receive points. For MRF, a copy of the current application form filed with the Hamilton County Engineer’s Office meets the requirement.

9) Will the project alleviate serious capacity problems or hazards or respond to the future level of service needs of the district?

- 10 - Project design is for future demand.
- 8 - Project design is for partial future demand.
- 6 - Project design is for current demand.
- 4 - Project design is for minimal increase in capacity.
- 2 - Project design is for no increase in capacity.

Appeal Score

Criterion 9 – Alleviate Capacity Problems

The applying agency shall provide a narrative, along with pertinent support documentation, which describe the existing deficiencies and showing how congestion will be reduced or eliminated and how service will be improved to meet the needs of any expected growth or development. A formal capacity analysis accompanying the application would be beneficial. Projected traffic or demand should be calculated as follows:

Formula:

Existing users x design year factor = projected users

<u>Design Year</u>	<u>Design year factor</u>		
	<u>Urban</u>	<u>Suburban</u>	<u>Rural</u>
20	1.40	1.70	1.60
10	1.20	1.35	1.30

Definitions:

Future demand – Project will eliminate existing congestion or deficiencies and will provide sufficient capacity or service for twenty-year projected demand or fully developed area conditions. Justification must be supplied if the area is already largely developed or undevelopable and thus the projection factors used deviate from the above table.

Partial future demand – Project will eliminate existing congestion or deficiencies and will provide sufficient capacity or service for ten-year projected demand or partially developed area conditions. Justification must be supplied if the area is already largely developed or undevelopable and thus the projection factors used deviate from the above table.

Current demand – Project will eliminate existing congestion or deficiencies and will provide sufficient capacity or service only for existing demand and conditions.

Minimal increase – Project will reduce but not eliminate existing congestion or deficiencies and will provide a minimal but less than sufficient increase in existing capacity or service for existing demand and conditions.

No increase – Project will have no effect on existing congestion or deficiencies and provide no increase in capacity or service for existing demand and conditions.

10) Readiness to Proceed - If SCIP/LTIP funds are granted, when would the construction contract be awarded?

- 5- Will be under contract by December 31, 2007 and no delinquent projects in Rounds 18 & 19
- 3 - Will be under contract by March 31, 2008 and/or one delinquent project in Rounds 18 & 19
- 0 - Will not be under contract by March 31, 2008 and/or more than one delinquent project in Rounds 18 & 19

Criterion 10 – Readiness to Proceed

The Support Staff will assign points based on engineering experience and status of design plans. A project is considered delinquent when it has not received a notice to proceed within the time stated on the original application and no time extension has been granted by the OPWC. An applying agency receiving approval for a project and subsequently canceling the same after the bid date on the application will receive zero (0) points under this round and the following round.

11) Does the infrastructure have regional impact? Consider origination and destination of traffic, functional classifications, size of service area, and number of jurisdictions served, etc.

- 10 – Major Impact
- 8 – Significant Impact
- 6 – Moderate Impact
- 4 – Minor Impact
- 2 – Minimal or No Impact
- Appeal Score
-

Criterion 11 - Regional Impact

The regional significance of the infrastructure that is being repaired or replaced.

Definitions:

Major Impact – Roads: Major Arterial: A direct connector to an Interstate Highway; Arterials are intended to provide a greater degree of mobility rather than land access. Arterials generally convey large traffic volumes for distances greater than one mile. A major arterial is a highway that is of regional importance and is intended to serve beyond the county. It may connect urban centers with one another and/or with outlying communities and employment or shopping centers. A major arterial is intended primarily to serve through traffic.

Significant Impact – Roads: Minor Arterial: A roadway, also serving through traffic, that is similar in function to a major arterial, but operates with lower traffic volumes, serves trips of shorter distances (but still greater than one mile), and may provide a higher degree of property access than do major arterials.

Moderate Impact – Roads: Major Collector: A roadway that provides for traffic movement between local roads/streets and arterials or community-wide activity centers and carries moderate traffic volumes over moderate distances (generally less than one mile). Major collectors may also provide direct access to abutting properties, such as regional shopping centers, large industrial parks, major subdivisions and community-wide recreational facilities, but typically not individual residences. Most major collectors are also county roads and are therefore through streets.

Minor Impact – Roads: Minor Collector: A roadway similar in functions to a major collector but which carries lower traffic volumes over shorter distances and has a higher degree of property access. Minor collectors may serve as main circulation streets within large, residential neighborhoods. Most minor collectors are also township roads and streets and may, or may not, be through streets.

Minimal or No Impact - Roads: Local: A roadway that is primarily intended to provide access to abutting properties. It tends to accommodate lower traffic volumes, serves short trips (generally within neighborhoods), and provides connections preferably only to collector streets rather than arterials.

12) What is the overall economic health of the jurisdiction?

10 Points

☒ 8 Points

6 Points

4 Points

2 Points

Criterion 12 – Economic Health

The District 2 Integrating Committee predetermines the applying agency's economic health. The economic health of a jurisdiction may periodically be adjusted when census and other budgetary data are updated.

13) Has any formal action by a federal, state, or local government agency resulted in a partial or complete ban of the usage or expansion of the usage for the involved infrastructure?

10 - Complete ban, facility closed

8 – 80% reduction in legal load or 4-wheeled vehicles only

7 – Moratorium on future development, *not* functioning for current demand

6 – 60% reduction in legal load

5 - Moratorium on future development, functioning for current demand

4 – 40% reduction in legal load

2 – 20% reduction in legal load

☒ 0 – Less than 20% reduction in legal load

Appeal Score

Criterion 13 - Ban

The applying agency shall provide documentation to show that a facility ban or moratorium has been formally placed. The ban or moratorium must have been caused by a structural or operational problem. Points will only be awarded if the end result of the project will cause the ban to be lifted.

14) What is the total number of existing daily users that will benefit as a result of the proposed project?

10 - 16,000 or more

8 - 12,000 to 15,999

6 - 8,000 to 11,999

4 - 4,000 to 7,999

☒ 2 – 3,999 and under

Appeal Score

Criterion 14 - Users

The applying agency shall provide documentation. A registered professional engineer or the applying agency's C.E.O must certify the appropriate documentation. Documentation may include current traffic counts, households served, when converted to a measurement of persons. Public transit users are permitted to be counted for the roads and bridges, but only when certifiable ridership figures are provided.

5) Has the applying agency enacted the optional \$5 license plate fee, an infrastructure levy, a user fee, or dedicated tax for the pertinent infrastructure? *(Provide documentation of which fees have been enacted.)*

☒ 5 Two or more of the above

3 - One of the above

0 - None of the above

Appeal Score

Criterion 15 – Fees, Levies, Etc.

The applying agency shall document (in the "Additional Support Information" form) which type of fees, levies or taxes they have dedicated toward the type of infrastructure being applied for.

GEOTECHNICAL EXPLORATION

WESTGATE DRIVE

CLEVES, OHIO

Prepared for: **Village of Cleves**
Thelen Project No.: **050439NE**



THELEN ASSOCIATES, INC.

Geotechnical • Testing Engineers

○ 1398 Cox Avenue / Erlanger, Kentucky 41018-1002 / 859-746-9400 / Fax 859-746-9408
✓ 2140 Waycross Road / Cincinnati, Ohio 45240-2719 / 513-825-4350 / Fax 513-825-4756
www.thelenassoc.com



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May 12, 2006

Village of Cleves
101 North Miami Avenue
Cleves, Ohio 45002

Attention: Mr. Eric Winhusen

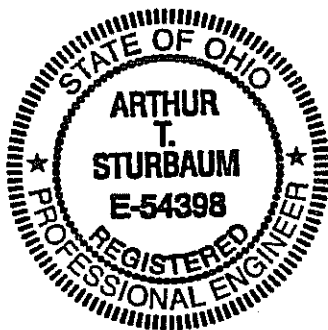
Re: Geotechnical Exploration
Westgate Drive
Cleves, Ohio

Ladies and Gentlemen:

Contained herein are observations, conclusions and recommendations concerning pavement and subgrade conditions along Westgate Drive, extending from East Morgan Street to Western Ridge Drive within the Village of Cleves, Ohio. This work was performed in accordance with our Proposal-Agreement N23134-R dated April 14, 2005.

We are enclosing with this report a reprint of "Important Information About Your Geotechnical Engineering Report" published by ASFE, Professional Firms Practicing in the Geosciences, which our firm would like to introduce to you at this time.

We appreciate the opportunity to be of continuing service to the Village of Cleves. Should you have any questions concerning the information, conclusions or recommendations contained in this report, please do not hesitate to contact us.



ATS:bkm
050439NE

Respectfully submitted,
THELEN ASSOCIATES, INC.

Arthur T. Sturbaum
Arthur T. Sturbaum, P.E.
Senior Geotechnical Engineer

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✓ 2140 Waycross Road / Cincinnati, Ohio 45240-2719 / 513-825-4350 / Fax 513-825-4756

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May 12, 2006

**GEOTECHNICAL EXPLORATION
WESTGATE DRIVE
CLEVES, OHIO**

1.0 INTRODUCTION

This report contains the results of a geotechnical exploration performed along the length of Westgate Drive, extending from East Morgan Street to Western Ridge Drive within the Village of Cleves, Ohio.

2.0 SCOPE

The purposes of the services were determine pavement thicknesses, subgrade conditions and general subsurface profile along Westgate Drive and to relate the engineering properties of the subsurface profile to potential rehabilitation and/or reconstruction of the roadway.

3.0 SITE HISTORY AND PROJECT CHARACTERISTICS

Westgate Drive extends northward from East Morgan Street within the Village of Cleves and connects East Morgan Street to Western Ridge Drive over a distance of approximately 1,700 lineal feet and an elevation differential of approximately 170 feet.

From East Morgan Street northward approximately 800 feet, Westgate Drive rises with an approximate 14 percent grade and ascends approximately 250 feet northeastward before leveling off to a 3 percent eastward sloping grade for approximately 500 feet. The street then rises at 10 percent grade to its intersection with Western Ridge Drive.

Westgate Drive is currently paved with asphalt concrete pavement with precast concrete curbing. The pavement has been patched numerous times. The southernmost 1,000 feet of roadway, extending from El. 500 to El. 600, is heavily deteriorated, with alligatored pavement and severe rutting.

~~The pavement over the central portion is less deteriorated but contains numerous patches and longitudinal cracks.~~

4.0 SITE HISTORY AND FIELD EXPLORATION

In 2002, Thelen Associates, Inc. prepared a preliminary Report of Consulting Services for Westgate Drive from East Morgan Street to East Scott Street. This study was prepared for the Village of Cleves under our Project No. 020975NE. As part of these services four (4) pavement cores were performed to determine the pavement constituents. A copy of the Consulting Services Report from 2002 is included in the Appendix to this report.

As part of the current services, six (6) test borings were performed in or adjacent to Westgate Drive. The test borings were staked in the field by the Project Geotechnical Engineer. The test boring locations and ground surface elevations were determined by a survey crew from Thelen Associates, Inc. following completion of drilling. The test boring locations are indicated on the Boring Plan, Drawing 050439NE-1 taken from CAGIS topography and included in the Appendix to this report.

The test borings were performed with a truck-mounted drill rig and hollow stem augers, sampling in advance of the drilling with driven 2-inch O.D. split-spoon samplers in accordance with the procedures of ASTM D1586. This sampling procedure is performed by driving the spoon with a 130-pound hammer and a controlled 30-inch drop. The number of blows required to drive the split-spoon the final 12 inches are summed and represent the standard penetration N-values. Representative portions of the split-spoon

samples were selected and placed in glass jars. All field samples were appropriately marked.

In addition to the field sampling, slope indicator casing was set in Test Borings 102 and 104 upon completion of drilling.

Concurrent with the drilling operation, the Drilling Technician prepared field test boring logs of the subsurface profile, noting types and depths of sampling, standard penetration test resistances (N-values), pavement and base thicknesses, soil and bedrock stratifications and other pertinent data.

5.0 LABORATORY REVIEW

Following completion of the test borings, the samples were returned to our Soil Mechanics Laboratory where they were reviewed and visually classified by the Project Geotechnical Engineer. Representative samples were selected for Atterberg limits and particle size analysis classification tests as well as natural moisture content determinations. A tabulation of the laboratory test results is included in the Appendix along with the particle size analysis test form.

Based on the Drilling Technician's field logs, the results of the laboratory tests and the Engineer's visual classification of the samples, the final test boring logs were prepared. Copies of these logs are included in the Appendix along with a Soil Classification Sheet describing the terms and symbols used in their preparation.

The dashed lines on the test boring logs which identify the changes between soil or bedrock types were determined by interpolation between the samples and should be considered to be approximate. Only changes which occur within samples can be precisely determined and are indicated by solid lines on the logs. The transition between soil and bedrock types may be abrupt or gradual.

6.0 EXISTING SITE CONDITIONS

For the purposed of this report, Westgate Drive has been stationed beginning at Station 0+00 at the intersection of East Morgan Drive and Westgate Drive and terminating at Station 17+00 at the eastern terminus. The stationing is shown on the Boring Plan included in the Appendix. A summary of the existing conditions is presented below.

Between Stations 0+00 and 2+00, the pavement is relatively level. There is severe patching on the east side of the pavement with longitudinal and alligatored cracking particularly in the center of the street.

Between Stations 2+00 and 3+00, there is an existing landslide located on the open lot to the immediate west of the pavement. The toe of this landslide has encroached into the pavement, resulting in a depression encompassing the entire southbound lane over a longitudinal distance of 100 feet. The curb has heaved in the area representing the toe of the landslide, which extends through grassy areas to the rear yard of the residence immediately to the north.

From Stations 3+00 to 4+00, the pavement exhibits significant longitudinal cracking and uneven surfaces. A fire hydrant located at Station 4+50 is currently leaking, and has undermined the curb immediately adjacent to the hydrant.

Between Stations 4+00 and 5+00, the pavement is severely deteriorated, with large sections of the surface course removed. A concrete patch extends diagonally immediately north of East Scott Street with numerous pavement patches present.

Between Stations 5+00 and 7+00, there is significant alligatoring within the pavement in the southbound lane. Severe rutting is also present in both lanes of the pavement in this

area. Backfill settlement is present within the pavement adjacent to the manhole at approximately Station 6+90.

Alligator cracking is also present the north edge of the pavement between Stations 8+00 and 9+00, in conjunction with backfill associated cracking adjacent to manholes.

Between Stations 10+00 and 12+50, standing water is continually present on the north side of the pavement. The entire pavement section in this area is cracked, with rectangular alligator-type cracking spaced at roughly one (1) foot on center throughout the entire area. A large section of the pavement has been removed and replaced with new asphalt between Stations 12 and 13+00.

East of Station 13+00, the pavement is in relatively good condition, with longitudinal cracks transversing the pavement at Station 13+50 and again in conjunction with sewer manholes at Station 15+50. Some slight alligator cracking is noted on the upslope (north) side of the pavement between Stations 15+50 and 16+50.

The deteriorated areas of the pavement have been sketched on the ODOT topography shown on the Boring Plan.

7.0 SUBSURFACE PROFILE

7.1 Pavement

The current test borings as well as the previous pavement cores indicate that the pavements at the lower elevations, south of Station 3+00 are underlain by a thin sand and gravel base course. The pavement itself is asphaltic concrete which varies in thickness from 4-1/2 inches in Test Boring 101 to 7 inches in Test Borings 104, 105 and 106. The thinner pavements are generally within the steepest portion of the ascending grade. Pavements in these areas are also heavily deteriorated.

7.2 Subgrade Soils

The test borings indicate an extremely variable subsurface profile along the alignment of Westgate Drive. At the base of the slope, north of East Morgan Street, the subsurface profile in Test Boring 101 consists of fill extending up to 7.0 feet from the ground surface. The fill consists of a mixture of native silty clay and degraded shale and limestone bedrock and was visually classified as stiff to very stiff. N-values range from 10 to 18 blows per foot with water contents between 8 and 18 percent. The fill classifies as a lean clay, CL according to the Unified Soil Classification System (USCS), with a liquid limit of 39 percent and plasticity index of 15 percent.

Stiff silty to sandy clay extends below the fill to a depth of 12.0 feet. N-values range from 13 to 16 blows per foot with moisture contents between 14.2 and 14.4 percent.

From 12.0 to 19.5 feet, Test Boring 101 extends into a zone of stiff sandy silty clay which classifies CL (USCS) with a liquid limit of 27 and plasticity index of 18. Moisture contents were between 15.7 and 22.6 percent, generally above the plastic limit of the soil. N-values range from 12 to 23 blows per foot.

Between 14.5 and 35.2 feet, Test Boring 101 extended into stiff silty clay with limestone and shale fragments. The soil is generally described as colluvium, soil derived from translation from higher to lower elevations either a result of ancient landsliding or by glaciation. Colluvium possesses high internal shear strengths but is often associated with landsliding at the basal contact with the underlying bedrock surface.

Bedrock, an interbedded system of Ordovician Age shale and gray hard limestone was encountered at a depth of 35.2 feet, El. 477.5

Test Boring 102 is located within an observable toe bulge at the west side of Westgate Drive. This toe bulge is remnants of a landslide which extends upward to the west through the adjacent open lot and into the rear lot of the building north of Test Boring 102.

The soils exposed in Test Boring 102 consist of medium dense silt extending to 4.0 feet from the ground surface. Inclined shear planes (slickensides) were noted upon examination of the silt samples. The silt classifies ML (USCS) and contains 77 percent silt-size particles based on particle-size analysis.

From 4.0 to 19.5 feet, colluvial soils, consisting of silty clay with shale fragments and limestone floaters were encountered. These soils were visually classified as very stiff with N-values between 31 and 39 blows per foot and refusal, defined as 50 blows of the hammer for 3 inches of penetration, presumably on a limestone floater, encountered on one occasion. Water contents ranged from 13.9 to 19.2 percent.

Below the colluvium layer a very stiff silty clay with sand and wood fragments extended to 22.0 feet, then a stiff residual clay to the surface of the interbedded shale and limestone bedrock, which was encountered at 22.9 feet from the ground surface. Gray (unweathered) bedrock was encountered at 24.5 feet.

Test Boring 103 encountered stiff silty clay with bedding planes and limestone floaters to 7.0 feet. This soil is visually classified as stiff, with N-values between 8 and 20 blows per foot. Water contents are in the low 20 percent range.

A zone of medium dense silt extended from 7.0 to 9.5 feet, with N-values of 16 blows per foot before encountering colluvium, which extended to 17.0 feet. A zone of silty clay with roots was encountered in the midst of the colluvium mass.

Weathered interbedded shale and limestone bedrock was encountered at a depth of 17.0 feet.

Test Borings 104 and 105 encountered interbedded shale and limestone bedrock immediately beneath the pavement in Test Boring 104 and 3.0 feet below the ground surface in Test Boring 105.

Test Boring 106 encountered granular soils, primarily medium dense to loose silt. N-values were between 8 and 14 blows per foot. The silt overlies a medium dense silty sand with N-values between 8 and 19 blows per foot.

With the exception of a trace of groundwater at the bedrock surface in Test Boring 101, all borings were dry upon completion.

The slope inclinometers which were installed in Test Borings 102 and 104 were monitored periodically between July 29, 2005 and April 7, 2005. Copies of the inclinometer readings are included in the Appendix.

The inclinometer in Test Boring 104 indicated virtually no subsurface movement. All readings are within equipment tolerances.

In Test Boring 102, the inclinometer remained vertical in readings taken between July 29, 2005 and February 2006, indicating a slight drift, less than 0.10 inch southward and eastward. This movement is occurring in the upper 4 feet of the inclinometer casing.

Readings taken subsequent to February 2006 in Test Boring 102 indicate movement in the upper 4 feet of up to 1/2 inch. A second trend noted in the later readings is a creep movement of nearly 1/4 inch, beginning at the surface of the interbedded shale and limestone bedrock, which was encountered at depth of 22.9 feet in the test borings.

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 Limitations

Based upon our engineering reconnaissance of the site, the test borings, a visual examination of the samples, the laboratory tests, our understanding of the site history and our experience as Consulting Soil and Foundation Engineers in the Greater Cincinnati

Area, we have reached the following conclusions and make the following recommendations.

The conclusions and recommendations of this report have been derived by relating the general principles of the discipline of Geotechnical Engineering to the potential remediation of Westgate Drive. Because changes in surface, subsurface, climatic and economic conditions can occur with time and location, we recommend for our mutual interest that the use of this report be restricted to this specific project.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, surface water, groundwater or air, on or below or around the roadway.

We have performed the test borings and laboratory tests for our evaluation of the site conditions and for the formulation of the conclusions and recommendations of this report. We assume no responsibility for the interpretation or extrapolation of the data by others.

The earthwork and subgrade preparation recommendations of this report presume that the earthwork will be monitored continuously by an Engineering Technician under the direction of a Registered Professional Geotechnical Engineer. We recommend that the Village contract these services directly with Thelen Associates, Inc.

After you have had an opportunity to study this geotechnical report and to discuss its implications with the Design Civil Engineer, we recommend that a meeting be held between the members of the design team to review potential remediation plans and specifications in light of the geotechnical report, paying particular attention to the possible implications of the geotechnical report with respect to potential construction problems and construction procedures which may be standard in the industry, but not consistent with our recommendations. This meeting should be held prior to submitting the contract documents in the market place for bidding.

The criteria presented above for earthwork are, in our opinion, the minimum acceptable levels for satisfactory performance of the project. Local regulations may necessitate specifications which are more stringent than those presented in this report.

8.2 General

The pavement along Westgate Drive has reached the end of its service life and requires total replacement and subgrade reconditioning. As a minimum, complete removal replacement should be performed between Station 0+00 and Station 9+00 and between Stations 10+00 and 13+00, however it will likely be as cost effective to replace the entire street.

The pavement rutting, alligator cracking and other deterioration of the pavement is an indication that the soil subgrade beneath the pavement surface will also require reconditioning. The major pavement distress is present in areas which are poorly drained, allowing the soil subgrade to become saturated and deteriorate.

In conjunction with the reconditioning, a granular base course with underdrains, tied into the storm sewer system should be provided between Stations 0+00 and Station 13+00.

The existing landslide located between Stations 2+00 and 3+00 appears to be moving southward into two (2) phases. At the surface, the toe of the slide represents the upper 4 feet of the subsurface profile moving over the stiff silty clay below. The toe bulge which is encroaching on the pavement may be restrained with a retaining wall, most likely a cantilevered drilled pier and lagging structure, socketed into the stiff silty clay. The wall should extend 2 to 3 feet above existing grades to contain future toe movement.

The deep soil creep also exhibited in Test Boring 102 is more difficult and can not be economically restrained. Extraordinary means such as tie-backs or buried shear blocks

may reduce the long-term creep movement, however it is likely that with time the landslide force will overcome these structures and the slope will continue to creep.

8.3 Shallow Retaining Wall, Stations 2+00 to 3+00

In order to contain the toe of the shallow landslide, a cantilevered retaining wall can be constructed at the toe of the slide. The primary purpose of the retaining wall would be restrain the toe of the existing slide to the west side of pavement. The wall should also be designed to extend 2 to 3 feet above existing grades in anticipation of further encroachment of the toe onto Westgate Drive. Periodic maintenance can also be anticipated should the toe of slide overtop the retaining wall.

The specific design of such a retaining wall is beyond the scope this exploration. Additional test borings, a site specific survey, laboratory testing and engineering analysis will be required to complete a final design for the retaining wall.

For estimating purposes, we have performed a preliminary design for a cantilevered retaining wall. The design assumes 24-inch diameter drilled piers spaced at 6 feet center to center, reinforced with steel soldier beams and timber or precast concrete lagging extending above the roadway. The preliminary design indicates that reinforcing could consist of an HP10x42 soldier pile. A minimum pile length of 20 feet long would be required, with 2.5 feet of the soldier pile extending above existing grades to retain the toe of the landslide. We estimate approximately that approximately 100 lineal feet of retaining wall will be required in this area.

8.4 Long-term Creep Movement

The deeper slope movement noted at the intact between the overburden and the bedrock in Test Boring 102 will not significantly impact the roadway. Relative movements may result in shear stress within the pavements, likely resulting in transverse cracking of the

new pavement. Remediation of the creep movement would require massive subsurface structures.

We recommend that the creep movement be monitored, via the existing slope inclinometer, on an annual basis to assess the degree of subsurface movement.

8.5 Subgrade Recommendations, Stations 0+00 to 10+00

The majority of the pavement within the initial 1,000 feet of Westgate Drive consists of full-depth asphalt pavement, which was placed directly on a clay subgrade. North of Station 8+00, the subgrade consists of interbedded shale and limestone bedrock which cross-cuts limestone layers and allows seepage from higher elevations to enter the subgrade. Utility trenches, both storm and sanitary, which are located within the pavement also contribute to the addition of subsurface water to soften the pavement subgrade.

In order to complete restoration of the lower section of Westgate Drive, it will be necessary to completely remove the pavement and to recondition the soil subgrade below to provide suitable pavement support.

In conjunction with the reconditioning of the subgrade, it will be necessary to incorporate a granular base beneath the proposed pavement. Transverse drains will be required to periodically intercept subsurface water from the granular base and conduct the drainage into the storm sewer system.

In conjunction with the subgrade reconditioning, utility backfill for the sanitary and storm sewers beneath the pavement should be re-evaluated in the field. Granular backfill which has been used as pipe bedding in utility trenches should be provided with a permanent drainage outlet to the storm sewers to prevent infiltration of additional subsurface water. Alternately, the utility backfill may be replaced with controlled low strength mortar (clsm).

Catch basins for storm sewers should be slotted to serve as inlets for the underdrains and the granular base beneath the pavement section.

8.6 Subgrade Recommendations, Stations 10+00 to 13+00

Between Stations 10+00 and 13+00, standing water is continually present adjacent to the northern portion of the roadway. We recommend that a trench drain be installed behind the curb to intercept water seepage, which is reaching the pavement subgrade in this area and has resulted in substantial deterioration of the pavement. The underdrain should incorporate free-draining granular material, wrapped in a geotextile and should be discharged to the storm sewer system catch basins located at approximately Station 10+50.

The pavement section between Stations 10+00 and 13+00 should also be removed in its entirety and the subgrade reconditioned prior to the placement of the new pavement.

8.7 Subgrade Preparation, Stations 13+00 to 17.00

The pavements in the northern section are in relatively good condition with the exception of the transverse cracks. The pavement in this section may be overlaid with the cracked sections locally removed and patched. Alternately, the pavement section may be completely removed in conjunction with the remainder of the street rehabilitation and the subgrade reconditioned. We would anticipate limited subgrade reconditioning to be required in this area because of the condition of the existing pavement.

8.8 General Subgrade Recommendations

Following the removal of the existing pavement, the exposed soil subgrade should be proofrolled with a loaded single-axle dump truck or accepted equal in the presence of the Project Geotechnical Engineer or a representative thereof. Soft or yielding areas should

be undercut as required to expose firm unyielding soils or to a maximum depth of 3 feet below subgrade level.

The surface of the undercut should be scarified, aerated, recompactd in place to a minimum of 95 percent of the maximum dry density as determined by the standard Proctor moisture-density test, ASTM D698.

If shallow utilities restrict the maximum depth of undercut, consideration can be given to reducing the required undercut by 50 percent, that is to a maximum of 18 inches below subgrade. The subgrade should then be reinforced by placing a 6-inch layer of crushed ODOT 304 granular material compacted to at least 95 percent, ASTM D698.

The subgrade may then be reinforced using a biaxial geogrid, Tensar™ BX1100 or accepted equal with a minimum of 12 inches of additional crushed granular material, ODOT 304, placed immediately above the geogrid. If a drainage layer is incorporated, crushed ODOT 57 granular material may be used to provide drainage beneath the pavement.

All new fill to restore the pavement subgrade should be placed in shallow level layers, 6 to 8 inches in thickness, at moisture contents within 2 percent of optimum. Clay fill should be compacted as outlined in ODOT, Section 203. Typically this requires degrees of compaction between 98 percent and 102 percent of the maximum dry density, ASTM D698, depending on the dry density of the borrow material.

Immediately prior to placing the pavement, the subgrade should be moisture-conditioned to bring the moisture to within 1 percent of optimum, and the pavement surface should be recompactd in place to a minimum of 100 percent of the maximum dry density, ASTM D698.

ATS:bkm
050439NE

APPENDIX

ASFЕ Report Information

Report of Consulting Services, September 16, 2002

Slope Inclinatorner Readings

Tabulation of Laboratory Tests

Particle Size Analysis

Test Boring Logs

Soil Classification Sheet

Boring Plan, Drawing 050439NE-1

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

CONSULTING SERVICES

WESTGATE DRIVE

CLEVELAND, OHIO

Prepared for: **Village of Cleveland**
Thelen Project No.: **020975NE**



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September 16, 2002

Village of Cleves
c/o JMA Consultants
2021 Auburn Avenue
Cincinnati, Ohio 45219

Attention: Ms. Jennifer Vatter

Re: Consulting Services
Westgate Drive
Cleves, Ohio

Ladies and Gentlemen:

At the request of Ms. Jennifer Vatter, JMA Consultants, we have conducted a site reconnaissance of the existing pavement of lower Westgate Drive, located on the east side of E. Morgan Road approximately one-eighth mile north of its intersection with Main Street, Cleves, Ohio.

The purposes of our services were to conduct an engineering reconnaissance of the existing pavement surface and to offer our opinion as to the suitability of the existing pavement and the potential for rehabilitation of the existing surface.

The pavement section studied extended from the intersection of Westgate Drive and E. Morgan Drive, 400 Westgate Drive to 420 Westgate Drive, encompassing the intersection with E. Scott Street which extends to the west.

The pavement is part of a subdivision which was constructed approximately 30 years ago based on visual appearances. The street is asphalt concrete pavement with pre-cast

concrete curbing. The section of Westgate Drive is a winding street which climbs approximately 125 feet in elevation from its intersection with E. Morgan Street.

The surface pavement consists of an aged asphalt concrete, the surface of which has deteriorated to a point where exposed aggregate and loose aggregate are present over the surface of the majority of the pavement. The pavement is underlain with storm and sanitary sewers throughout its length. The sewers are located within the pavement alignment.

Longitudinal cracks located approximately 10 to 15 feet apart span from curb-to-curb for the entire length of the pavement section. As these cracks approach curbs, they feather into fan patterns where pavement is alligatoring and deteriorating.

A large section of pavement immediately opposite the residence at 402 Westgate Drive has been removed and replaced with an uneven pavement patch.

There is severe patching on the south side of the pavement immediately adjacent to the residence at 400 Westgate Drive. Longitudinal cracking becomes transverse with potholes located in the center of the street and alligator cracking located within the pavement adjacent to the intersection with E. Morgan Drive. Cracking is particularly prevalent in the center of the street and adjacent to the north storm sewer inlet.

At the intersection with E. Scott Street, the pavement is severely deteriorated, with large sections of the surface course removed. There is evidence of uneven asphalt patching at the turn lanes both on the east and west sides of the intersection, and severe alligator cracking throughout the pavement section.

Severe rutting also occurs adjacent to the storm sewer outlet located on the south side of Westgate Drive immediately west of its intersection with E. Scott Street. A large pothole

which has been patched and repaired numerous times is also present adjacent to the storm sewer catch basin.

As the street extends upward, severe rutting and depressions as well as alligator cracking were noted immediately adjacent to the residence at 408 Westgate Drive, with four (4) repaired potholes and severe asphalt deterioration adjacent to the concrete curb. The deterioration continues in the north lane with severe alligatoring immediately to the west of the residence as well as substantial subgrade disturbance and patching.

Pavement distress was noted adjacent to catch basins and utilities between 408 and 412 Westgate Drive, with transverse cracking extending curb-to-curb approximately 10 to 15 feet on-center.

Between 414 and 420 Eastgate Drive, where the pavement becomes level, alligator cracking is present throughout the entire pavement. A large section of pavement has been removed and replaced with an uneven patch immediately adjacent to the residence at 422 Westgate Drive.

At east end of Westgate Drive, adjacent to the intersection with E. Morgan Drive, the pavement is severely rutted and patched, indicating subgrade disturbance and pavement distress due to braking automobiles.

The cracking in the pavement has been sealed with a liquid asphalt patch, however the cracking is reoccurring through the sealed areas.

The pavement surface itself is erratic, relatively smooth on the upper, flat portions of the street and extremely disturbed adjacent to the intersection with E. Scott Street and in the areas where subsurface drainage has deteriorated the pavement adjacent to storm sewers and catch basins.

Four (4) pavement cores were made along the existing street on September 12, 2002. The cores were made between 420 and 418 Westgate Drive (Core No. 1), adjacent to the driveway of 410A and 410B Westgate Drive (Core No. 2), at the intersection of Westgate Drive and E. Scott Street (Core No. 3) and immediately west of the intersection of Westgate Drive and E. Morgan Drive (Core No. 4). Cores 1 and 2 yielded a full-depth pavement section 7.7 and 7.4 inches thick, respectively with a surface course of 2.2 and 1.7 inches, respectively. Core 3 disintegrated upon coring with a combined thickness of fragments of 2.8 inches. Core 4 averaged 3.5 inches in total thickness. Both Cores 3 and 4 were underlain with approximately 5 inches of crushed sand and gravel base.

The subgrade beneath Core 1 consisted of medium stiff silty clay to 6 inches below the base of the pavement underlain with mottled brown and gray stiff undisturbed clay. Dark olive brown moist medium stiff sediment comprised the subgrade beneath Core 3. Highly weathered bedrock, shale and thinly bedded limestone was encountered directly beneath the pavement in Core 2 and beneath the granular base in Core 4.

Based upon our engineering reconnaissance of the site, a visual examination of the recovered cores and subgrade samples, our general understanding of the site conditions, and our experience as Consulting Soil Engineers in the Greater Cincinnati Area, we have reached the following conclusions and make the following recommendations.

The conclusions and recommendations of this report have been derived by relating the general principles of the discipline of Civil Geotechnical Engineering to the condition of the existing pavement. Because changes in surface, subsurface and climatic conditions as well as economic fluctuations can occur with time, we recommend for our mutual interest that the use of this report be restricted to this specific project.

Due to the severity of cracking observed within the pavement section, the age of the pavement itself and the deteriorated subgrade noted on the downslope portions of Westgate Drive and E. Scott Street as well as the disturbance of the pavement adjacent

to utilities, it is our opinion that the pavement in the study section has reached the end of its design life. Subgrade improvement will be required in sloping areas beginning north of the intersection adjacent to the intersection with E. Scott Street as well as the lower portion adjacent to E. Morgan Street.

The longitudinal cracking observed north of E. Scott Street is a result of downslope creep of the pavement section over the bedrock subgrade. This creep is likely accelerated by seepage along horizontal layers within the bedrock system. The pavement section in this area is full-depth asphalt, placed directly over the shale and limestone subgrade. Because there is no granular base to provide subslab drainage, hydrostatic pressures have built up beneath the pavement, accelerating the creep movement between the pavement and the subgrade. The irregular pavement at the intersection with E. Scott Street likely represents the lower limit of the creeping section, which has bulged and cracked from the pressure of the creeping pavement above.

It is our opinion that the severity and nature of the cracking and the deterioration of the pavement which can be observed from E. Scott Street to E. Morgan Drive cannot be repaired using an asphalt overlay or resealing. It is our opinion that the cracks will propagate through any new pavement section in a short period of time, and the problems associated with softened subgrade adjacent to utilities will continue the deterioration process of the underlying pavement.

In our opinion, the pavement section should be removed, the subgrade reconditioned and the pavement replaced with a new pavement section designed based on current traffic loading for the subdivision and incorporating a granular base course and intermittent transverse drains tied into the storm sewer system. Subgrade improvement and strengthening is particularly necessary adjacent to E. Morgan Avenue and at the intersection of Westgate Drive and E. Scott Street.

In general, we recommend that the pavement section from E. Morgan Drive to 414 Westgate Drive be removed in its entirety. The exposed subgrade should be proofrolled with a heavy piece of equipment such as a loaded single-axle dump truck or accepted equal. Soft or yielding areas should be undercut as required to remove yielding soils and replaced with a compacted and tested fill placed to Ohio Department of Transportation (ODOT) 203 Specifications for Embankment Construction.

Once the yielding areas of the subgrade are recompacted in-place, the new pavement section may then be installed. The pavement north of E. Scott Street to 414 Westgate should be replaced with a pavement section incorporating a granular base and underdrains to relieve hydrostatic pressures beneath the pavement.

In the higher areas, between 414 and 420 Westgate Drive, it is our opinion that the surface pavement has deteriorated to the point beyond salvagability. We anticipate remediation to consist of the removal of the surface course by grinding, and replacement of the surface with a new asphalt surface course.

We appreciate the opportunity to be of continuing service to the Village of Cleves. Should you have any questions concerning the information, conclusions or recommendations contained in this report, please do not hesitate to contact us.

Respectfully submitted,
THELEN ASSOCIATES, INC.

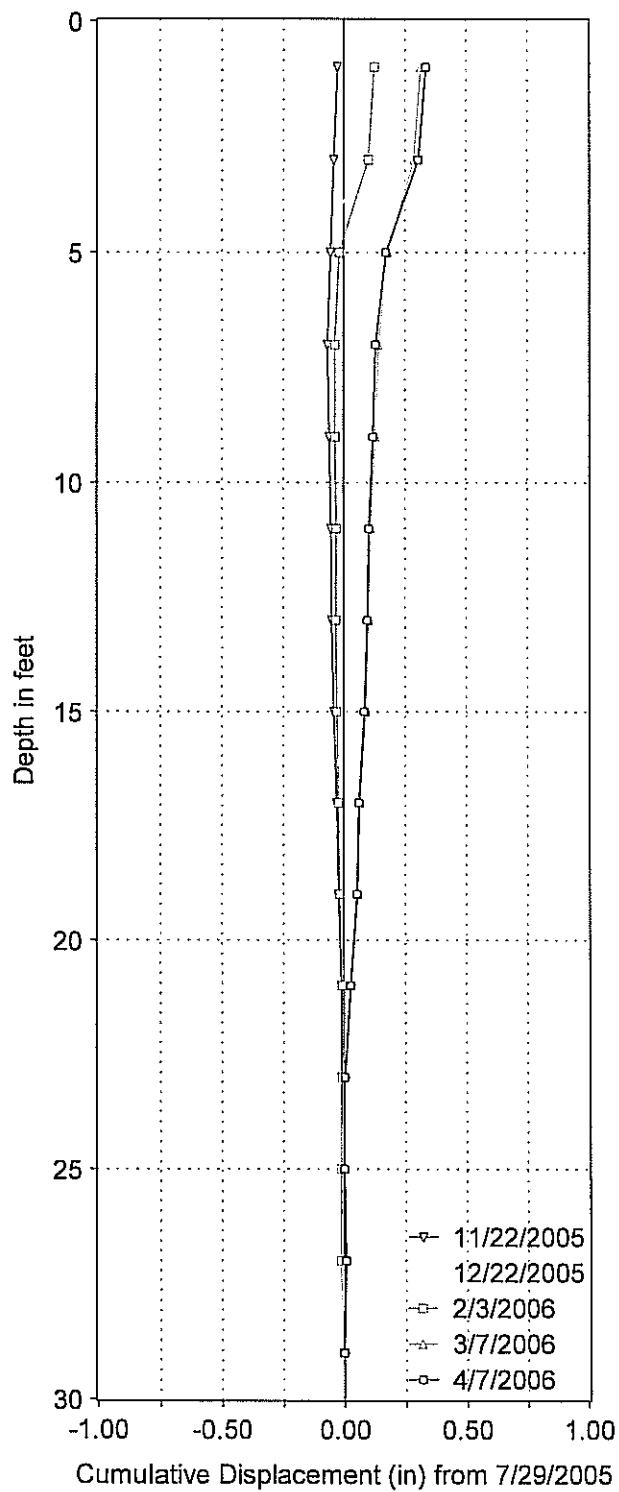
Arthur T. Sturbaum, P.E.
Senior Geotechnical Engineer

ATS:bkm

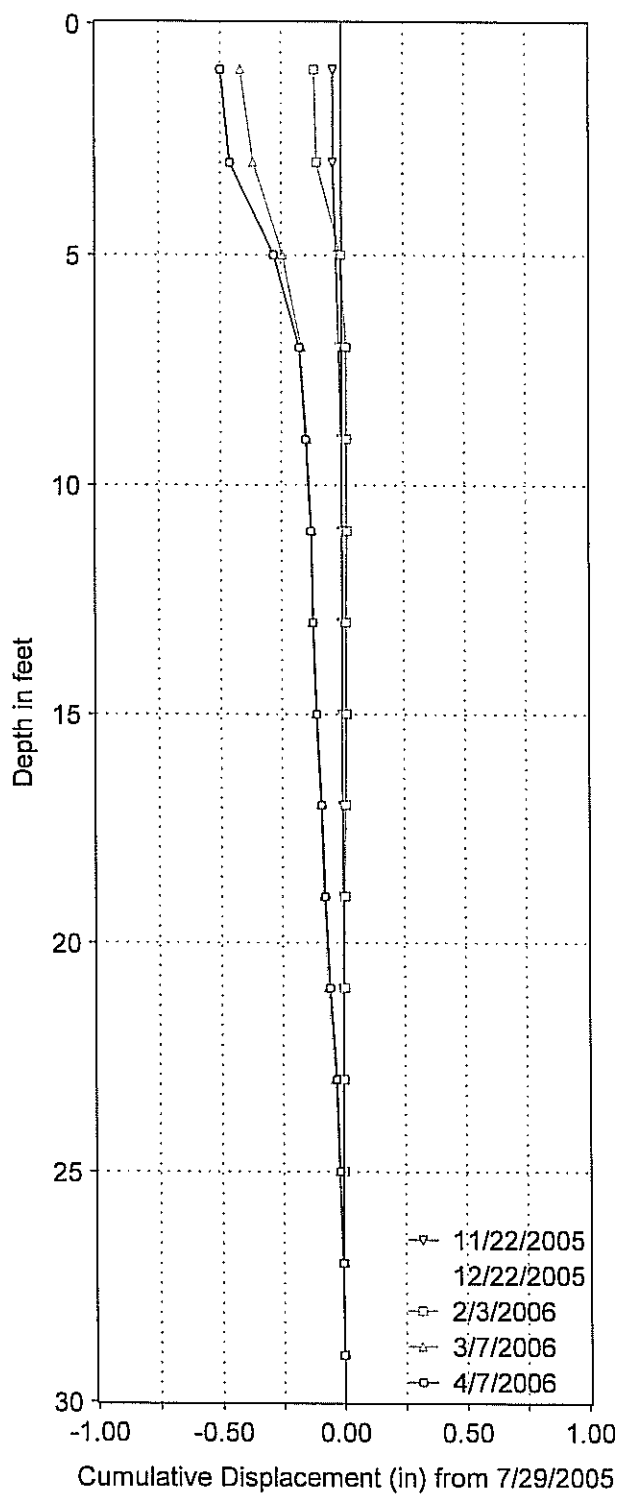
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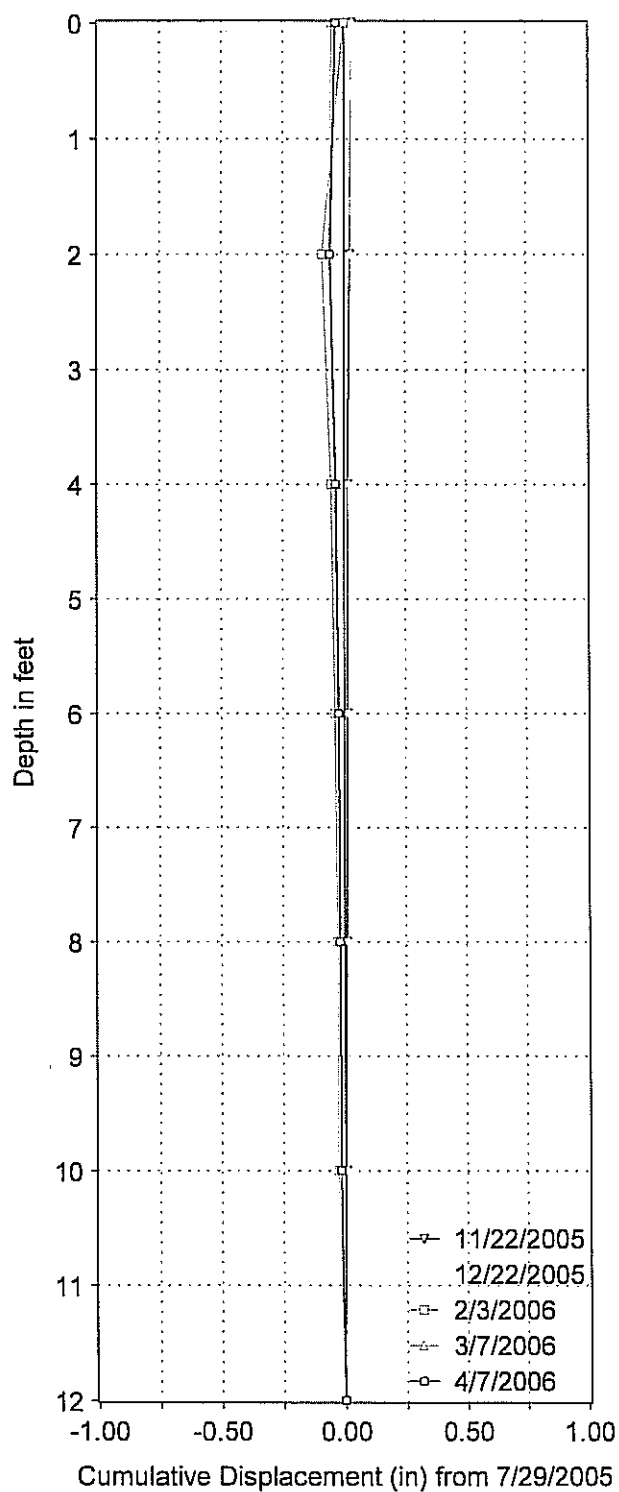
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North (+) and South (-)



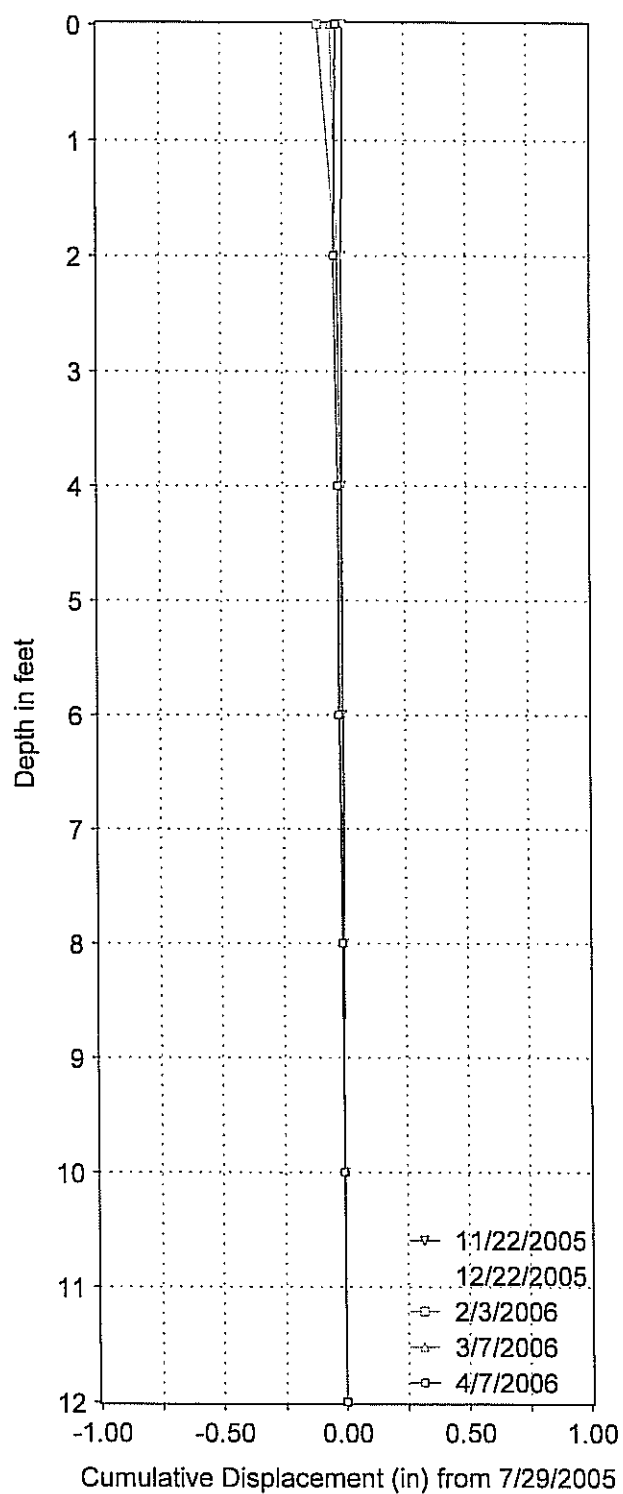
050439 ICM102, B-Axis
East (+) and West (-)



050439 ICM104, A-Axis
North (+) and South (-)

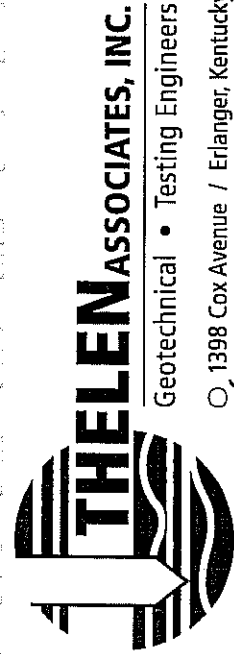


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East (+) and West (-)



Thelen Associates
2140 Waycross Road
Cincinnati, Ohio 45240

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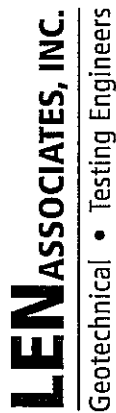
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VILLAGE OF CLEVELS
 GEOTECHNICAL EXPLORATION
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 050439NE

TABULATION OF LABORATORY TESTS

Page 1 of 2

Boring Number	Sample Number	Depth, ft.		Moisture Content, %	Atterberg Limits, %			Gradation Analysis, %				USCS Classification	
		From	To		LL	PL	PI	Gravel	Sand	Silt	Clay		
101	1B	0.7	1.5	19.5	39	23	15					CL	
	3	4.0	5.5	20.0									
	5	7.5	9.0	14.4									
	6	10.0	11.5	14.2									
	7	12.5	14.0	19.8									
	8	15.0	16.5	22.6	27	19	18						
	9	17.5	19.0	15.7									
	10	20.0	21.5	17.8									
	11	22.5	24.0	20.7									
	12	25.0	26.5	19.9									
	13	30.0	31.5	20.9									
102	1B	0.2	2.0	13.9	NON-PLASTIC							ML	
	2A	2.0	3.3	16.5				0	11	77	12		
	2B	3.3	4.0	20.8	NON-PLASTIC								
	3	4.0	5.5	19.0									
	4	7.5	9.0	19.1									
	5	10.0	11.5	15.8									
	6	12.5	12.8	19.2									
	7	15.0	16.5	13.9									
	8	17.5	19.0	17.7									
	9	20.0	21.5	18.1									
103	1	0.4	1.9	21.2	43	26	17					CL	
	2	2.0	3.5	22.8									
	3	3.5	5.0	22.0									
	4	5.0	6.5	17.4									



VILLAGE OF CLEVELAND
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Page 2 of 2

Boring Number	Sample Number	Depth, ft.		Moisture Content, %	Atterberg Limits, %			Gradation Analysis, %			USCS Classification
		From	To		LL	PL	PI	Gravel	Sand	Silt	
103	5	7.5	9.0	22.1							
	6	10.0	11.5	19.0							
	7	12.5	14.0	19.7							
	8	15.0	16.5	19.3							
104	1	0.6	2.5	17.0	49	29	20				ML
	2	2.6	3.1	14.2							
	3	4.5	6.5	15.4							
	4	7.5	8.4	16.8							
105	1	0.6	2.6	22.4	44	21	23				CL
	2A	2.6	3.0	17.6							



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LOG OF TEST BORING

CLIENT: Village of Cleves

BORING # 101 (1 of 2)

PROJECT: Geotechnical Exploration, Westgate Drive, Cleves, Ohio

JOB # 050439NE

LOCATION OF BORING: As shown on Boring Plan, Drawing 050439NE-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (ft.)	DEPTH SCALE (ft.)	SAMPLE			
				Cond	Blows/6"	No.	Type Rec. (in.)
513.5		0.0					
513.1	ASPHALT CONCRETE (4½")		0.4				
	Mixed brown wet loose FILL, fine to coarse sand, gravel and crushed limestone (4").	0.7		D/I	6/4/4	1A DS 8	
512.8							
	Mixed brown to olive brown, trace gray moist very stiff FILL, shale fragments and limestone floaters. (CL)	3.0		I	3/4/6	2 DS 10	
510.5							
	Mixed olive brown, brown and gray moist stiff to very stiff FILL, silty clay, some topsoil with limestone and shale fragments.	7.0	5	I	8/8/10	3 DS 7	
506.5							
	Mottled brown moist stiff SILTY CLAY with iron oxide stains, fine to coarse sand, trace shale fragments.	9.5		I	5/8/10	4 DS 12	
504.0							
	Mottled brown moist stiff to very stiff sandy SILTY CLAY, trace fine gravel and iron oxide stains.	12.0	10	I	6/8/8	5 DS 10	
501.5							
	Mottled brown moist stiff to very stiff sandy SILTY CLAY, trace fine gravel and iron oxide stains.	17.0	15	I	3/6/7	6 DS 12	
496.5							
	Gray moist medium stiff SILTY CLAY, trace fine sand. (CL)	19.5		I	5/6/7	7 DS 12	
494.0							
	Olive brown and gray moist medium stiff SILTY CLAY with limestone fragments and fine to medium sand.	22.0	20	I	3/4/8	8 DS 18	
491.5							
	Olive brown to gray moist very stiff SILTY CLAY with limestone fragments and coarse gravel, trace shale fragments.	28.0	25	I	13/9/14	9 DS 9	
485.5							
	Olive gray moist very stiff SILTY CLAY with shale fragments (colluvium).			I	8/9/24	10 DS 13	
				I	10/14/20	11 DS 13	
				I	10/14/16	12 DS 18	

Datum MSL Hammer Wt. 140 lb Hole Diameter 5 in. Foreman GB
 Surf. Elev. 513.5 Hammer Drop 30 in. Rock Core Dia. Engineer ATS
 Date Started 6-13-05 Pipe Size 2 in. O.D. Boring Method CFA Date Completed 6-13-05

SAMPLE CONDITIONS

SAMPLE TYPE

GROUND WATER DEPTH

BORING METHOD

D - DISINTEGRATED

DS - DRIVEN SPLIT SPOON

FIRST NOTED Trace 35.0 ft.

HSA - HOLLOW STEM AUGERS

I - INTACT

PT - PRESSED SHELBY TUBE

AT COMPLETION Trace ft.

CFA - CONTINUOUS FLIGHT AUGERS

U - UNDISTURBED

CA - CONTINUOUS FLIGHT AUGER

AFTER hrs. ft.

DC - DRIVING CASING

L - LOST

RC - ROCK CORE

BACKFILLED Immed. hrs.

MD - MUD DRILLING

* STANDARD PENETRATION TEST

DRIVING 3" O.D. SAMPLER 1' WITH 140" HAMMER FALLING 22"



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LOG OF TEST BORING

CLIENT: Village of Cleves

BORING # 101 (2of2)

PROJECT: Geotechnical Exploration, Westgate Drive, Cleves, Ohio

JOB # 050439NE

LOCATION OF BORING: As shown on Boring Plan, Drawing 050439NE-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (ft.)	DEPTH SCALE (ft.)	SAMPLE				
				Cond	Blows/6"	No.	Type	Rec. (in.)
478.3	Gray moist stiff to very stiff SILTY CLAY with limestone and shale fragments.		30.0	I	7/12/14	13	DS	10
477.5	Interbedded brown moist very soft very highly weathered SHALE and gray hard LIMESTONE (bedrock).	36.0	35.2					
477.0	Gray moist soft SHALE and gray hard LIMESTONE (bedrock).	36.5	35	I	15/25/50/6"	14A 14B 14C	DS	10
Split spoon refusal and bottom of test boring at 36.5 feet.			40					
			45					
			50					
			55					
			60					
			65					
			70					
			75					
			80					
			85					

Datum MSL Hammer Wt. 140 lb Hole Diameter 5 in. Foreman GB
 Surf. Elev. 513.5 Hammer Drop 30 in. Rock Core Dia. Engineer ATS
 Date Started 6-13-05 Pipe Size 2 in. O.D. Boring Method CFA Date Completed 6-13-05

SAMPLE CONDITIONS

SAMPLE TYPE

GROUND WATER DEPTH

BORING METHOD

D - DISINTEGRATED

DS - DRIVEN SPLIT SPOON

FIRST NOTED Trace 35.0 ft.

HSA - HOLLOW STEM AUGERS

I - INTACT

PT - PRESSED SHELBY TUBE

AT COMPLETION Trace ft.

CFA - CONTINUOUS FLIGHT AUGERS

U - UNDISTURBED

CA - CONTINUOUS FLIGHT AUGER

AFTER hrs. ft.

DC - DRIVING CASING

L - LOST

RC - ROCK CORE

BACKFILLED Immed. hrs.

MD - MUD DRILLING

* STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS



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LOG OF TEST BORING

CLIENT: Village of Cleves

BORING # 102

PROJECT: Geotechnical Exploration, Westgate Drive, Cleves, Ohio

JOB # 050439NE

LOCATION OF BORING: As shown on Boring Plan, Drawing 050439NE-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (ft.)	DEPTH SCALE (ft.)	SAMPLE				
				Cond	Blows/6"	No.	Type	Rec. (in.)
527.0		0.0						
526.8	TOPSOIL	0.2		I/D	4/5/6/10	1A 1B	DS	24
523.7	Mottled brown moist medium dense SILT with hairlike roots (ML).	3.3		D	6/6/6/7	2A 2B	DS	24
523.0	Olive brown moist medium dense clayey SILT with inclined slickensides. (ML)	4.0		I	4/8/9/10	3	DS	12
			5					
				I	10/18/19	4	DS	12
			10					
				I	8/15/19	5	DS	12
515.0	Mottled brown and gray moist very stiff SILTY CLAY with limestone and shale fragments.	12.0						
				I	50/3"	6	DS	3
			15					
				I	27/20/19	7	DS	4
507.5	Brown moist stiff to very stiff SILTY CLAY and CLAY with limestone floaters and bedding planes.	19.5		I	10/15/16	8	DS	7
			20					
505.0	Olive brown to gray moist very stiff SILTY CLAY with limestone floaters, trace fine to medium sand and organic matter (wood).	22.0		I	11/15/23	9	DS	10
504.1	Brown and gray moist very stiff SILTY CLAY with limestone floaters.	22.9						
				I	20/42/25	10	DS	13
502.5	Interbedded brown, olive brown and gray moist very soft weathered SHALE and gray hard LIMESTONE (bedrock).	24.5			Note: Scale Change			
			25		50/6"	11	DS	6
				I				
497.0	Interbedded gray moist soft SHALE and gray hard LIMESTONE (bedrock).	30.0						
			30					
	Split spoon refusal at bottom of test boring at 24.5 feet.							
	Augered to 30 feet and set slope inclinometer.							

Datum MSL Hammer Wt. 140 lb Hole Diameter 7 in. Foreman GB
 Surf. Elev. 527.0 Hammer Drop 30 in. Rock Core Dia. Engineer ATS
 Date Started 6-28-05 Pipe Size 2 in. O.D. Boring Method 3/4 HSA Date Completed 6-28-05

SAMPLE CONDITIONS

D - DISINTEGRATED
 I - INTACT
 U - UNDISTURBED
 L - LOST

SAMPLE TYPE

DS - DRIVEN SPLIT SPOON
 PT - PRESSED SHELBY TUBE
 CA - CONTINUOUS FLIGHT AUGER
 RC - ROCK CORE

GROUND WATER DEPTH

FIRST NOTED None ft.
 AT COMPLETION Dry ft.
 AFTER hrs. ft.
 BACKFILLED Immed. hrs.

BORING METHOD

HSA - HOLLOW STEM AUGERS
 CFA - CONTINUOUS FLIGHT AUGERS
 DC - DRIVING CASING
 MD - MUD DRILLING

* STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30" COUNT MADE AT 6" INTERVALS



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LOG OF TEST BORING

CLIENT: Village of Cleves

BORING # 103

PROJECT: Geotechnical Exploration, Westgate Drive, Cleves, Ohio

JOB # 050439NE

LOCATION OF BORING: As shown on Boring Plan, Drawing 050439NE-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (ft.)	DEPTH SCALE (ft.)	SAMPLE			
				Cond	Blows/6"	No.	Type Rec. (in.)
542.0		0.0					
541.6	ASPHALT PAVEMENT (4¾")						
		0.4		I	8/3/5	1	DS 12
				I	3/12/8	2	DS 18
				I	5/5/5	3	DS 18
			5	I	4/6/8	4	DS 18
535.0	Brown to olive brown moist stiff SILTY CLAY, trace bedding planes, limestone floaters and iron oxide stains. (CL)	7.0					
				I	6/7/9	5	DS 18
532.5	Brown moist medium dense SILT with iron oxide stains.	9.5					
			10	I	5/8/11	6	DS 18
530.0	Mottled brown and gray moist stiff SILTY CLAY with shale fragments, trace gravel (colluvium).	12.0					
				I	10/12/17	7	DS 18
527.5	Brown and gray moist stiff SILTY CLAY with organics (roots).	14.5					
			15	I	9/11/16	8	DS 18
525.0	Brown moist stiff SILTY CLAY with shale fragments (colluvium).	17.0					
				I	12/6/8	9	DS 9
522.5	Olive brown moist soft weathered SHALE (bedrock).	19.5					
			20	I	21/50/4"	10	DS 7
521.1	Interbedded gray, trace brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	20.9					
	Split spoon refusal at bottom of test boring at 20.9 feet.						
			25				

Datum MSL Hammer Wt. 140 lb Hole Diameter 5 in. Foreman GB
 Surf. Elev. 542.0 Hammer Drop 30 in. Rock Core Dia. Engineer ATS
 Date Started 6-29-05 Pipe Size 2 in. O.D. Boring Method CFA Date Completed 6-29-05

SAMPLE CONDITIONS

SAMPLE TYPE

GROUND WATER DEPTH

BORING METHOD

D - DISINTEGRATED
 I - INTACT
 U - UNDISTURBED
 L - LOST

DS - DRIVEN SPLIT SPOON
 PT - PRESSED SHELBY TUBE
 CA - CONTINUOUS FLIGHT AUGER
 RC - ROCK CORE

FIRST NOTED None ft.
 AT COMPLETION Dry ft.
 AFTER hrs. ft.
 BACKFILLED hrs.

HSA - HOLLOW STEM AUGERS
 CFA - CONTINUOUS FLIGHT AUGERS
 DC - DRIVING CASING
 MD - MUD DRILLING

* STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30". COUNT MADE AT 6" INTERVALS



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LOG OF TEST BORING

CLIENT: Village of Cleves

BORING # 104

PROJECT: Geotechnical Exploration, Westgate Drive, Cleves, Ohio

JOB # 050439NE

LOCATION OF BORING: As shown on Boring Plan, Drawing 050439NE-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (ft.)	DEPTH SCALE (ft.)	SAMPLE				
				Cond	Blows/6"	No.	Type	Rec. (In.)
584.0		0.0						
583.4	ASPHALT PAVEMENT (7")	0.6						
				I	6/10/13/15	1	DS	8
				I	50/6"	2	DS	3
			5	I	10/20/36/50/6"	3	DS	18
577.0	Interbedded brown, some olive brown moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock) (ML).	7.0						
				I	30/50/4"	4	DS	9
574.5	Interbedded olive brown and gray moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	9.5	10					
				I	12/50/4"	5	DS	9
			15					
569.0	Interbedded gray moist soft SHALE and gray hard LIMESTONE (bedrock).	15.0						
	Split spoon refusal and bottom of test boring at 10.8 feet.							
	Augered to 15.0 feet and set inclinometer.							
			20					
			25					

Datum MSL Hammer Wt. 140 lb Hole Diameter 7 in. Foreman GB
 Surf. Elev. 584.0 Hammer Drop 30 in. Rock Core Dia. Engineer ATS
 Date Started 6-30-05 Pipe Size 2 in. O.D. Boring Method 3/4" HSA Date Completed 6-30-05

SAMPLE CONDITIONS

SAMPLE TYPE

GROUND WATER DEPTH

BORING METHOD

D - DISINTEGRATED

DS - DRIVEN SPLIT SPOON

FIRST NOTED None ft.

HSA - HOLLOW STEM AUGERS

I - INTACT

PT - PRESSED SHELBY TUBE

AT COMPLETION Dry ft.

CFA - CONTINUOUS FLIGHT AUGERS

U - UNDISTURBED

CA - CONTINUOUS FLIGHT AUGER

AFTER hrs. ft.

DC - DRIVING CASING

L - LOST

RC - ROCK CORE

BACKFILLED Immed. hrs.

MD - MUD DRILLING

* STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30" COUNT MADE AT 6" INTERVALS



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LOG OF TEST BORING

CLIENT: Village of Cleves

BORING # 105

PROJECT: Geotechnical Exploration, Westgate Drive, Cleves, Ohio

JOB # 050439NE

LOCATION OF BORING: As shown on Boring Plan, Drawing 050439NE-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (ft.)	DEPTH SCALE (ft.)	SAMPLE				
				Cond	Blows/6"	No.	Type	Rec. (in.)
611.0		0.0						
610.4	ASPHALT PAVEMENT (7")	0.6						
609.0	Mottled brown moist stiff to very stiff SILTY CLAY with fine sand and iron oxide stains. (CL)	2.0		I	4/4/5/6	1	DS	13
608.0	Olive brown moist very stiff SILTY CLAY with shale fragments and limestone floaters (colluvium).	3.0		I	4/12/18/50/6"	2A	DS	18
605.5	Interbedded brown to olive brown, trace gray moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	5.5	5			3A	DS	9
605.0	Interbedded gray moist soft SHALE and gray hard LIMESTONE (bedrock).	6.0		I	23/50/6"	3B	DS	9
	Split spoon refusal and bottom of test boring at 6.0 feet.							
			10					
			15					
			20					
			25					

Datum MSL Hammer Wt. 140 lb Hole Diameter 7 in. Foreman GB
 Surf. Elev. 611.0 Hammer Drop 30 in. Rock Core Dia. Engineer ATS
 Date Started 6-30-05 Pipe Size 2 in. O.D. Boring Method 3/4" HSA Date Completed 6-30-05

SAMPLE CONDITIONS

D - DISINTEGRATED
 I - INTACT
 U - UNDISTURBED
 L - LOST

SAMPLE TYPE

DS - DRIVEN SPLIT SPOON
 PT - PRESSED SHELBY TUBE
 CA - CONTINUOUS FLIGHT AUGER
 RC - ROCK CORE

GROUND WATER DEPTH

FIRST NOTED None ft.
 AT COMPLETION Dry ft.
 AFTER hrs. ft.
 BACKFILLED Immed. hrs.

BORING METHOD

HSA - HOLLOW STEM AUGERS
 CFA - CONTINUOUS FLIGHT AUGERS
 DC - DRIVING CASING
 MD - MUD DRILLING

* STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS



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LOG OF TEST BORING

CLIENT: Village of Cleves

BORING # 106

PROJECT: Geotechnical Exploration, Westgate Drive, Cleves, Ohio

JOB # 050439NE

LOCATION OF BORING: As shown on Boring Plan, Drawing 050439NE-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (ft.)	DEPTH SCALE (ft.)	SAMPLE				
				Cond	Blows/6"	No.	Type	Rec. (in.)
637.0		0.0						
636.4	ASPHALT PAVEMENT (7")	0.6						
633.9	Mixed reddish brown moist very stiff FILL, silty clay, trace fine sand.	3.1		I	6/7/7	1	DS	12
633.5	Mottled reddish brown moist very stiff SILTY CLAY.	3.5		I	5/7/10	2A 2B	DS	18
632.0	Mottled brown moist medium dense SILT.	5.0	5	D	6/7/7	3	DS	18
				D	7/5/4	4	DS	18
627.5	Brown moist loose SILT.	9.5	10	D	4/5/4	5	DS	12
				D	4/4/4	6	DS	18
622.5	Brown moist loose SILT, trace fine sand.	14.5	15	D	3/4/5	7	DS	18
				D	4/6/2	8	DS	13
				D	8/9/10	9	DS	13
615.5	Brown moist loose to medium dense silty fine SAND.	21.5	20	D	6/6/6	10	DS	18
	Bottom of test boring at 21.5 feet.		25					

Datum MSL Hammer Wt. 140 lb Hole Diameter 5 in. Foreman GB
 Surf. Elev. 637.0 Hammer Drop 30 in. Rack Core Dia. Engineer ATS
 Date Started 6-13-05 Pipe Size 2 in. O.D. Boring Method CFA Date Completed 6-13-05

SAMPLE CONDITIONS

D - DISINTEGRATED
 I - INTACT
 U - UNDISTURBED
 L - LOST

SAMPLE TYPE

DS - DRIVEN SPLIT SPOON
 PT - PRESSED SHELBY TUBE
 CA - CONTINUOUS FLIGHT AUGER
 RC - ROCK CORE

GROUND WATER DEPTH

FIRST NOTED None ft.
 AT COMPLETION Dry ft.
 AFTER hrs. ft.
 BACKFILLED Immed. hrs.

BORING METHOD

HSA - HOLLOW STEM AUGERS
 CFA - CONTINUOUS FLIGHT AUGERS
 DC - DRIVING CASING
 MD - MUD DRILLING

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SOIL CLASSIFICATION SHEET

NON COHESIVE SOILS (Silt, Sand, Gravel and Combinations)

Density

Very Loose	- 5 blows/ft. or less
Loose	- 6 to 10 blows/ft.
Medium Dense	- 11 to 30 blows/ft.
Dense	- 31 to 50 blows/ft.
Very Dense	- 51 blows/ft. or more

Relative Properties

Descriptive Term	Percent
Trace	1 – 10
Little	11 – 20
Some	21 – 35
And	36 – 50

Particle Size Identification

Boulders	- 8 inch diameter or more
Cobbles	- 3 to 8 inch diameter
Gravel	- Coarse - 3/4 to 3 inches
	- Fine - 3/16 to 3/4 inches
Sand	- Coarse - 2mm to 5mm (dia. of pencil lead)
	- Medium - 0.45mm to 2mm (dia. of broom straw)
	- Fine - 0.075mm to 0.45mm (dia. of human hair)
Silt	- 0.005mm to 0.075mm (Cannot see particles)

COHESIVE SOILS (Clay, Silt and Combinations)

Consistency

Consistency	Field Identification
Very Soft	Easily penetrated several inches by fist
Soft	Easily penetrated several inches by thumb
Medium Stiff	Can be penetrated several inches by thumb with moderate effort
Stiff	Readily indented by thumb but penetrated only with great effort
Very Stiff	Readily indented by thumbnail
Hard	Indented with difficulty by thumbnail

Unconfined Compressive Strength (tons/sq. ft.)

Less than 0.25
0.25 – 0.5
0.5 – 1.0
1.0 – 2.0
2.0 – 4.0
Over 4.0

Classification on logs are made by visual inspection.

Standard Penetration Test – Driving a 2.0" O.D., 1 3/8" I.D., sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and making the tests are recorded for each 6 inches of penetration on the drill log (Example – 6/8/9). The standard penetration test results can be obtained by adding the last two figures (i.e. 8+9=17 blows/ft.). Refusal is defined as greater than 50 blows for 6 inches or less penetration.

Strata Changes – In the column "Soil Descriptions" on the drill log, the horizontal lines represent strata changes. A solid line (————) represents an actually observed change; a dashed line (— — — —) represents an estimated change.

Groundwater observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.